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LUNACY AND MENTAL DEFICIENCY

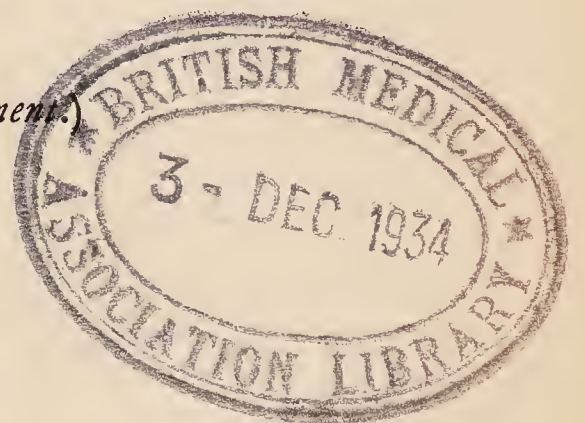


THE
EIGHTEENTH ANNUAL REPORT
OF
THE BOARD OF CONTROL
FOR THE YEAR 1931.

PART I

(Presented pursuant to Act of Parliament.)

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LONDON

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THE
EIGHTEENTH ANNUAL REPORT
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1932.

(FOR THE YEAR 1931.)

INTRODUCTORY.

THE MENTAL TREATMENT ACT, 1930.

Much of the introductory part of our last Report was occupied by a statement of the steps taken to bring the Mental Treatment Act into operation. Unfortunately, before those steps had become effective in many areas, the financial crisis compelled a slowing down of expenditure on all health services. Expressed in figures the results of the first year's working of the Act may seem disappointing, but statistics are not a conclusive test of progress and much preparatory work has been done which will be reflected in the figures for subsequent years. It always takes time to make the provisions of any new enactment generally known, and the normal difficulties of bringing any new measure into operation were aggravated by the acute shortage of accommodation in many of the more populous areas, which led some local authorities to place a too rigid limit on the admission of voluntary patients or even to exclude them altogether. In the whole area covered by the Lancashire Mental Hospitals Board not a single voluntary patient has been admitted into any public mental hospital; and even in London the beds available for voluntary patients outside of the Maudsley Hospital are quite inadequate to the needs of the population. But in the areas in which the Act has been energetically worked, the number of voluntary and temporary patients admitted has been substantial, and in one area the patients in these two classes amounted to nearly 45 per cent. of the total admissions during the year. Already in the case of private patients the voluntary and temporary admissions exceed those admitted under certificate. The fact that in the first year of working it was found possible to deal with such a high proportion of cases under the Mental Treatment Act, is most encouraging and goes far to vindicate our estimate of the proportion of admissions which will ultimately be dealt with



under that Act. When allowance is made for the exceptional difficulties with which local authorities were faced, the experience of the year, disappointing as the figures may appear at first sight, confirms the view expressed in a previous Report that the Mental Treatment Act will come to be recognized as marking an epoch in the treatment of mental disorder.

Out-patient Clinics.—Most encouraging progress has been made with the establishment of out-patient clinics. Already in connexion with 76 mental hospitals clinics have been established at 61 general hospitals, 19 mental hospitals and 18 other premises, and in some of the county areas a regular net-work of clinics has been organized in order to lessen the distance which patients in the outlying districts have to travel. We gladly acknowledge the readiness with which many voluntary hospitals have co-operated in the scheme, and we are convinced that where a voluntary hospital is available no better centre could be found. But in some counties the geographical distribution of the voluntary hospitals with out-patient departments is not such as to meet the needs of the remoter districts. In such cases we would suggest that the Local Education Authority might be approached with a view to the premises of the School clinic being utilised. School clinics are not generally used in the evening, which is the time when out-patients, many of whom are employed during the day time, are usually most ready to attend. The use of a consulting room and waiting room for one or two evenings in the month could probably be secured by arrangement with the Local Education Authority, and while this scheme would add to the demands on the medical staff, the experiment seems to us to deserve a trial. If patients are to be attracted to these clinics it is essential to make them reasonably accessible. The alternative of arranging free transport for the patients is open to the objection that it entails exactly the publicity which so many desire to avoid.

In some quarters objection has been taken to the employment of medical officers of the mental hospitals to the exclusion, as it is alleged, of other competent practitioners. This objection in our view is misconceived. We have no desire, nor have Local Authorities, to refuse the co-operation of any doctors who are willing to assist and who have the necessary experience in psychological medicine. But the treatment of out-patients is not an easy matter; it definitely calls for specialized experience which, outside of the big cities, is not often possessed by private practitioners. In many areas there will be no doctors who have this experience and training, except the staffs of the mental hospitals; and in such areas something like a monopoly of this work is inevitable, though the monopoly is accidental and not designed. But even in the areas, comparatively few in number, where psychiatrists in private practice are willing to take part in this work, it is in our judgment essential that the staff of the

mental hospitals should also be associated with it. If the mental disorder progresses to a stage at which in-patient treatment becomes necessary, in most cases patients will have to be treated in public mental hospitals. In the interest of continuity of treatment, a matter of special importance in dealing with mental disorders, it is of the utmost moment that the physician responsible for the in-patient treatment should have had full opportunity of access to the case in the earlier stage. We venture to stress this point because we are anxious to avoid the suggestion that in the advice we have given to local authorities we have been influenced by any kind of prejudice against private practitioners in psychiatry.

We wish once more to emphasize the importance of having well trained social workers attached to the clinic. By the wise generosity of the Commonwealth Fund a scheme for the training of social workers in psychiatry has been established in conjunction with the University of London and the School of Economics. A number of scholarships have been given by the Commonwealth Fund and workers trained under this scheme have been employed with success at Guy's Hospital, the Maudsley, St. John's Hospital, Wandsworth, and St. Peter's Hospital, Whitechapel, as well as Banstead and Ewell Mental Hospitals. The need for trained workers has long been recognized in the United States, and we feel that the Commonwealth Fund has rendered a real service, not only by the temporary endowment of the course of instruction but also by lending workers trained under this scheme so that they might have a chance of demonstrating their value in the most convincing fashion.

Temporary Patients.—The number of admissions of temporary patients under Section 5 of the Mental Treatment Act has been disappointingly small. It is impossible to visit any mental hospital without finding non-volitional cases sent in under certificate, although by the use of the new provision certification, with its attendant disabilities, might easily have been avoided. To some extent this is no doubt due to the fact that doctors in general practice have not yet become fully acquainted with the possibilities which the new Act offers of treating these cases without certification. But the fact that the proportion of temporary patients is much higher in the case of private patients suggests that considerations of cost also enter into the matter. To secure admission as a temporary patient two medical recommendations are required, one of which must be given by a practitioner approved by the Board. Though these approved practitioners are now fairly widely distributed, they are not everywhere readily available, and in many cases it may be necessary to refer to the Officer of the Local Authority to ascertain the name of the nearest doctor on the approved list. In any case if there is a second fee to be paid, we fear that in some areas rate-aided patients

are deprived of the benefit which Parliament meant to give them, because it costs a trifle less to send the patient in the first instance to a public assistance institution, where he can be detained for a period of fourteen days on the certificate of the medical officer alone. It would, indeed, be unfortunate if the necessity for a second recommendation, which Parliament inserted as a safeguard against the risk of improper detention, should have the effect of limiting the privilege of treatment on a temporary basis to the well-to-do classes. It may be, however, that the difficulty is due not to a misdirected zeal for economy but to the fact that public assistance officers have not yet been adequately instructed on this point. We propose to take this matter up with local authorities ; and the number of temporary admissions in one or two exceptional areas indicates that the difficulties, whatever they may be, are not insuperable.

General Hospitals.—The Act provides that voluntary and temporary patients may be received into hospitals, whether voluntary or municipal, which are approved for the purpose by the Board. We have never contemplated that the non-teaching hospitals would be able to appropriate many beds for cases of mental disorder, but the provision is important particularly in relation to border-line cases. Without this provision a border-line case, which proves to be psychotic and reaches the certificate stage, would have to be discharged. This means an interruption of treatment just when continuity is most desirable. There are also cases in which the mental condition is complicated by physical disorders which can be more effectively treated in a general hospital. To meet cases of both these kinds it would be advantageous to the larger general hospitals that they should obtain approval under the Act, even though the actual number of patients coming within its scope might be small. It is far more important that the teaching hospitals should take advantage of the Act, because of the value to the students in extending the range and variety of the clinical material. We look forward to a time when the larger teaching hospitals will have a complete psychiatric unit attached, such as forms part of the medical centre of Columbia University, New York. This is an ideal which it may take years to realise, but in the meantime we regret that hitherto voluntary hospitals have not shown any readiness to take advantage of their new opportunity. No doubt this is mainly due to the great demand on their beds for other purposes, but it may also be due in part to the fear of the difficulty of handling mental patients. We believe that the staffing difficulties are apt to be exaggerated, and if hospitals would make the experiment, as they easily might, on a small scale, it would be found that obstacles which appear formidable in theory soon disappear in practice. We are glad, however, to record that two voluntary hospitals, Hull Royal Infirmary and St. John's Hospital, Lewisham, have sought and obtained the approval of

the Board. In taking this step the latter had the advantage of a long-standing relation with Bethlem Royal Hospital. We hope that before long these commendable examples will be followed by many other voluntary hospitals.

Research.—In our last Report we emphasised the importance of the new power given to local authorities under Section 6 (3) of the Mental Treatment Act to undertake or contribute to the cost of research into mental illness. We hoped that it might have been possible to realize a scheme which has been adumbrated in previous Reports and to group all the mental hospitals for purposes of research round the university and medical school to which they would most naturally look for co-operation and advice. In order to devise means of co-ordinating research and to advise us in the exercise of the power to approve expenditure which the Act vests in our Board, we appointed, with the approval of the Minister of Health, an advisory committee including representatives of the Mental Hospitals Association, the Royal Medico-Psychological Association, the London County Council and the Lancashire and West Riding Mental Hospital Boards. Shortly after the appointment of the Committee the financial crisis developed, and after consulting the Minister we decided to suspend its operation until the position had improved sufficiently to justify local authorities in contemplating fresh expenditure. The postponement was inevitable, but we reached this decision with regret, since without research of a comprehensive character there is little hope of discovering the fundamental causes of mental breakdown. Until more is known of the causation of mental disorder no effective means of lessening its incidence can be expected. The treatment of these disorders in their earliest stages, which it is hoped to secure by the development of out-patient clinics, is the first step in the application to mental ill-health of the principles of preventive medicine. But to advance beyond the stage of early treatment to definite prophylaxis is impossible in the present state of knowledge. There is no branch of medicine in which research is more needed. Even from the purely economic standpoint when regard is had to the average life of mental patients and to the cost to the community of maintaining them, it will be realized that a small reduction in the incidence of mental disorder would soon more than compensate for the cost of even extended research.

In the meantime we note with satisfaction that much good scientific work continues to be done in individual hospitals, as will be seen by reference to Part II of this Report. This work is not only valuable in itself, but it reacts beneficially on the whole medical staff of the hospitals concerned. The vice of all institutional medical work is the tendency to slip into a mechanical routine, to be content to repeat to-day what was done yesterday. Nothing is more likely to counteract this tendency than active

scientific work in the laboratory. But the research work which is being undertaken now, admirable as it is, notably at the Maudsley Hospital, Cardiff, Birmingham and Wakefield, suffers from the want of any machinery of co-ordination. What is done at one hospital may have no relation to what is done at others. It is too much like a series of raids undertaken spasmodically at different sectors on a long front, instead of a well planned and concerted attack. Local successes may be won here and there along the line, but there is no general advance.

MENTAL DISORDERS.

If these observations sound pessimistic, it is only right that we should record our firm belief that year by year there is a real advance in general efficiency. The process of hospitalization steadily continues, and every year mental hospitals are coming more and more to deserve their title, because they are increasingly animated by a definitely curative aim. Almost everywhere there is an increasing readiness to seek means of active treatment. Recent appointments to posts of Superintendent have almost without exception gone to men with a scientific outlook and a determination to test every means of advance.

The cause of mental hygiene has suffered a grievous loss by the death in August last of Lt.-Col. J. R. Lord, who was for 24 years Superintendent of Horton. In spite of frail physique and the handicap of continued ill-health, Colonel Lord was never one of the Superintendents who were content with what has been aptly termed mere "trench warfare" against mental disease. A man of singularly active mind and restless energy he was always seeking for new methods of attack. His pioneer work in the development of the malarial treatment of general paralysis would by itself have been sufficient to establish his reputation in the history of psychiatry, but this was only one of an amazing range of activities. By his untimely death the mental health service in London and the Royal Medico-Psychological Association have lost an outstanding figure.

Accommodation in County and Borough Mental Hospitals— The increase in the number of patients in public mental hospitals during 1931 was 1,576. This unusually low figure gives unfortunately no ground for optimism, since it is mainly due to the increase of 728 in the number of deaths during the year. The net increase in any given year is always subject to accidental fluctuations, and for this reason we have always regarded the quinquennial average as the only safe basis of comparison. Had the death rate for 1931 been the same as in 1930 the net increase would have approximated to the average of the previous quinquennium. The steadiness of the rate of increase is the more remarkable because the economic difficulties of the last few

years, particularly of last year, might have been expected to produce an increase in the number of anxiety psychoses. Money worry is one of the commonest stresses contributing to mental breakdown and it speaks well for the mental health of the nation that, in a time of unprecedented strain, there should have been no rise in the admission rate. But while from this point of view the rate of increase is satisfactory, it is still very serious viewed in relation to the available accommodation. The increase in the number of beds is not keeping pace with the increase in the number under care. There is no margin of accommodation anywhere, and in many hospitals the overcrowding is serious and is bound to become still more serious in the future, unless energetic measures are taken to provide additional accommodation.

In some areas the planning of new mental hospitals cannot be further postponed without grave risk, but it is important to defer fresh capital commitment, and before undertaking the construction of a new hospital every effort should be made to devise alternative ways of meeting the difficulty. There are various ways in which this can be done. If the hospital has no admission unit with its ancillary convalescent villas, the provision of this therapeutic necessity should be undertaken as a first step. It is true that admission units are a comparatively costly addition, but a hospital without one cannot be efficient, and provided the design allows full room for all the requirements of a modern treatment centre the purchase of the expensive equipment can be deferred till a later date.

In many hospitals the accommodation for the nursing staff is still unsatisfactory. Mental nursing is exacting work, and after her spell of duty is over the nurse ought to be able to escape into a different atmosphere. It is useless to expect to recruit the right type of probationer in hospitals in which nurses are required to sleep in rooms opening off the wards and to take their meals and spend their leisure time in uncongenial surroundings. The construction of a nurses' home not only attracts a better class of recruit but by releasing accommodation which can be made available for patients it increases the bed accommodation at a relatively low cost.

Mental Defectives in Mental Hospitals.—In many areas the cheapest way of relieving the strain on the mental hospitals would be to provide alternative accommodation for those mental defectives whose condition no longer requires active hospital treatment and who would be suitable for transfer to a colony. Owing to the delay in providing accommodation for defectives, it has been the practice in many areas to certify under the Lunacy Acts lower grade defectives who could far more suitably have been dealt with in colonies had these been available. In other cases defectives, owing to some supervening psychosis, have been transferred from colonies to mental hospitals, but

although the psychosis may have cleared up, no steps have been taken to re-transfer them. In fact, it is not too much to say that in every mental hospital in the country there are a number of defectives who are there because there was at the time nowhere else to send them or because they had become too troublesome to be managed in a small institution. Defectives are prone to mental disorder, and we recognize that there must be many cases in which the supervening disorder is of such a type as to necessitate the patient's retention in a mental hospital. But unless it is necessary for medical reasons to keep the defective in a mental hospital, the practice of certifying them under the Lunacy Act of 1890 is to be deprecated. They are a nuisance to the other patients and a burden to the staff, who have no facilities for giving them the kind of training which they would receive in a properly organized colony. To use expensive mental hospital beds for the accommodation of the lower grade defectives who could be handled in a colony is extravagant; it is also ineffective. If the local authority already has a colony or estate which is laid out for ultimate development on colony lines for mental defectives, villa units can be built at a cost of, roughly, £100 a bed. There are, on a conservative estimate, 10,000 patients in mental hospitals in England and Wales who could with advantage be transferred to mental deficiency colonies, or to suitable public assistance institutions. This estimate is confirmed by the figures given in another part of this Report (p. 82) which indicate the results of a census of the defectives in two mental hospitals in a county selected for the purposes of this test as being typical of many others. The results of this census will, we hope, lead local authorities with over-crowded mental hospitals to consider whether the most economical way of remedying this overcrowding would not be to provide villas of an inexpensive type in colonies for the accommodation of the young and trainable patients, and to transfer the older and untrainable cases to suitable public assistance institutions. We do not believe that there is any other way in which the present overcrowding can be remedied at so small a cost.

The worst possible way of meeting the difficulty would be to overcrowd. We have given careful thought to the matter, but we are convinced that the present allowance of space required by the Board is a minimum which cannot with safety be reduced. The temporary overcrowding which is inevitable in the near future is sufficiently serious, but to revise the standard would, in our view, be retrograde and disastrous. Overcrowding, as we have so often pointed out, is bad for everyone concerned. It is bad for the patients; it makes them irritable and intractable and prejudices their chance of recovery. It is bad for the staff since overcrowded patients are always more difficult to handle, and, in the turbulent wards, the closer contact increases the likelihood of disorder. But besides this, overcrowding at night inevitably

increases the risk of spreading epidemic infections. Even now in many wards beds are often closer together than they ought to be in the light of what is now known of the range of droplet infections.

Occupational Therapy.—We believe that in most respects English mental hospitals compare favourably with those of any other country, but it is a matter of regret that in one respect, occupational therapy, they continue to lag behind the best American hospitals. Occupational therapy, in the sense of treatment prescribed medically with the object of hastening recovery and carried out by trained therapists in accordance with the individual needs of each patient, is still seldom to be found in English hospitals. If it is to be employed with any hope of success specialized occupation therapists are needed for whose training there are at present few facilities in this country. We cannot in the present state of public finances attempt to copy the lavish staffing of the more modern institutions in the United States. But without reproducing the elaboration of American methods, much more might be done to develop occupational treatment in our hospitals. There is still in many hospitals a tendency to assume that unless a patient can be employed in some immediately useful or remunerative way, it is a matter of indifference whether he does anything or nothing. This is a profound mistake. It is distressing to go round the wards and to find scores of patients left to deteriorate in wearisome idleness. It is bad for them and bad for the staff, for idle hands find as much opportunity for mischief in a mental hospital as outside. The idle patient has far too much time to brood over his real or imaginary troubles; he is a burden to himself and to others. We recognize that in some hospitals, notably at Barming Heath, the appointment of a skilled occupation officer has resulted in the employment of types of recent and progressing cases who a few years ago would have been regarded as incapable of benefiting by such treatment.

We are not disposed to attach too much importance to the returns of the number of employed patients, since these figures make no distinction between remedial occupation and employment designed to reduce maintenance costs and not to benefit the patient. In any case the totals are apt to be inflated by the inclusion of so-called "ward workers," whose work is often little more than nominal. But periodical returns are useful as an indication to the Superintendent whether any real and continuous effort is being made to devise occupations for the less easily employable patients. There are many cases in which it is better to give the patients work to which they are not accustomed. The output at first may be negligible, but the concentration required may be far more beneficial as a distraction than the more or less automatic performance of familiar work

which requires little attention and leaves the patients free to mope or brood.

In any case it is safe to say that there will be no occupation of any therapeutic value without careful organization. A beginning can be made without any appreciable expenditure by sending one or two specially selected nurses to take a short course of instruction in one of the hospitals where occupation therapy has been successfully organized. This has been suggested by visiting Commissioners in a number of recent entries, and we greatly regret that this suggestion has not been more generally adopted. It costs very little and the simpler handicrafts are easily learned. But the effective organization of occupation therapy in a big hospital really needs a specially trained worker ; and the larger authorities which have several hospitals ought to aim at having a central organizer who would visit all the hospitals in the group.

Gardening is an occupation which has been found very popular in some hospitals, and the practice of allotting small gardens to those patients who are willing to cultivate them has often had beneficial results. We have seen a remarkable rock garden which is the pride and joy of a homicidal patient who was previously a source of considerable anxiety to the attendants. In this connection we are glad to note that good progress is being made with the planting of ward gardens. Experience shows that there is no necessity for the airing courts even of the more turbulent patients to be left bare and arid. There will be many failures at first, and many plants will be torn up in the process ; but with patience it will be found in the end that there are few courts in which flowers cannot be grown. It is noticeable that women are generally more apt than men to destroy flowers, possibly because even among demented the instinct of self-decoration is stronger in women than in men. But the effort to make ward gardens deserve their name is well worth while, and results in the end are often gratifying.

“*Friends of the Hospital.*”—For obvious reasons mental hospitals and mental deficiency colonies can never be freely open to the public as many general hospitals are, and the result is that there is very little general interest taken in them, and they do not receive their fair share of philanthropic effort. There are a few hospitals which are so remote from any town of importance that it may be difficult to find any place to interest itself in their welfare, but in general there is some town sufficiently near to make it worth an effort to organize a body of sympathizers and helpers. It seems to us that some members of the visiting committee, particularly the women members, would be doing valuable work if they could organize in each area a body of “*Friends of the Hospital,*” or of the Colony, one of whose objects should be to raise an entertainment fund which

would meet the cost of outings for suitable patients. Members of such a body might "adopt" friendless patients, much as prisoners in Germany were helped during the Great War, and by occasional letters, small gifts and visits might help to lessen their sense of isolation and friendlessness. They could help too by supporting the sales of work which are usually organized at Christmas time and so extend the market for the various articles, often quite artistic, which are produced in the occupation rooms. We recognize the value of the canteen funds which exist now in many hospitals, but there are still a number without canteens, and even where they have been most successful the canteen funds cannot meet all the demands on them. More than any other municipal institutions, mental hospitals suffer from the general ignorance of their work, and the scheme has the advantage that it would widen the interest in this important branch of public health work, since people feel little interest in work to which they have made no individual contribution. Mental hospitals have greatly improved in recent years, but they will never be as good as they might and ought to be, until interest in them has become more widespread.

Cinema Entertainments.—Probably nothing has done more in recent years to add to the happiness and contentment of the patients than the installation of the cinema. The weekly or fortnightly entertainments not only afford great pleasure in themselves but, by giving the patients something to look forward to, they help to lessen the deadening monotony of institutional life. Unhappily recent technical developments of the cinema threaten seriously to limit its use in mental hospitals. The success of the talking film has been so marked that it is becoming more and more difficult to obtain silent films of good quality, and it seems probable that in the near future they may entirely cease to be made. The projector required for the silent film is comparatively simple to manipulate and there is ordinarily no difficulty in training some member of the staff to work it. But the sound film requires for its exhibition apparatus which is costly to install and complicated in working. The initial cost is four or five times the price of a silent projector and the maintenance of the delicate and intricate mechanism demands specialized experience and equipment. No doubt, in course of time, the price of sound projectors will be reduced, but in the present financial position the cost is almost prohibitive. We are glad, however, to know that this matter is receiving the attention of the Mental Hospitals Association, and we hope that some solution will be found. Other forms of entertainment appeal to particular sections, but the popularity of the cinema is universal, and it would be regrettable if technical improvements had the ironical result of robbing patients of the "pictures" in which they delight.

Libraries.—A department of mental hospitals which deserves

more attention than it generally receives is the library, and we are glad to record that in response to our request, special attention is being given to this branch of the work by the Red Cross and Order of St. John Hospitals Library. We realize that there are special difficulties in the management of a mental hospital library, and that there are bound to be some wards in which no books of any value can be kept. But even the destructive patients ought not to be left without any reading matter, and old magazines and illustrated papers are frequently appreciated by patients who cannot be trusted with books. This is not the time to urge visiting committees to increase their expenditure on books and papers, but hospitals situated within reach of the larger towns will often be able to find clubs or hotels which will give them old illustrated papers and magazines without charge, provided that the hospital will undertake the task of collecting them or will pay the carriage. So far as books are concerned we would like to see in every ward at least one volume for each patient. The better books must be kept in the library, but there ought always to be a bookshelf in each ward to which the patients have free access. There was a time when it was considered necessary to exercise a censorship over what patients were allowed to read, but it is now recognized that this precaution was irritating and unnecessary. But because patients are allowed to read almost anything, it must not be assumed that they will be content with any rubbish produced by past piety or present ineptitude. Books which people give to hospitals are, in general, those which they do not want themselves ; but too often gifts to mental hospital libraries appear to have been selected with the mistaken idea that books which no sane person would wish to read are quite suitable for the mentally disordered. A man's taste in reading does not change because he is under care, and the books which are popular in the world outside are the books which patients want. A generation accustomed to Edgar Wallace will not, even in dementia, take kindly to Victorian sentimentality or the "life and remains" of eminent divines. In particular cases carefully selected reading may have a definite therapeutic value, but apart from this the value of books as a sedative or anodyne is beyond question, and we hope that Superintendents will avail themselves of the help which the Red Cross Library is prepared to give.

In a mental deficiency institution the proportion of patients able to read with any enjoyment is much smaller than in a mental hospital. Nevertheless, among the higher grade patients there will be many who will benefit by having access to a library, and nearly all can appreciate illustrated magazines and picture papers. We hope that the needs of these institutions will not be overlooked. The staff, too, have a strong claim to consideration, their need of books being all the greater because many mental hospitals and most mental deficiency institutions are remote from shopping centres and places of amusement.

MENTAL DEFICIENCY.

Colonies.—The financial stringency has compelled a slowing down in the construction of colonies for mental defectives. The number of beds added during the year was 2,412, which compares favourably with the total of 917 for the previous year. But many schemes have been temporarily suspended, and while we hope that work will soon be resumed, this suspension will be reflected in the figures for next year. The need for beds is so urgent that no general stoppage of building could be contemplated, but the necessity of restricting loan expenditure to the absolute minimum has led us to advise local authorities to revise their programmes and to concentrate on the provision of beds, leaving the ancillary units to be added later. Experience has shewn that within limits it is possible in the early stages of the development of a colony to dispense with much that has been regarded, and rightly regarded, as necessary for the proper functioning of a complete colony. Accordingly we have advised authorities, especially where the estate includes a mansion adaptable in whole or in part as an administrative unit, to concentrate on the building of villas, which can now be constructed at a cost of a little over £100 a bed. Cooking in villas is practicable, though it may not be so convenient. As the colony grows there are advantages in heating from a central furnace. There must come a stage at which washing in an extemporized laundry ceases to be practicable. Early in the development of a colony workshops and classrooms become a necessity, but sometimes there are outbuildings which can be temporarily used for this purpose. The Assembly Hall may be postponed for a year or two. To have only the residential unit means a loss of efficiency in almost every direction and an increased maintenance cost. But for the present some of these inconveniences and difficulties must be faced. Otherwise many authorities would continue to be without accommodation for their most urgent cases.

Not a few authorities already possess estates which have been purchased with a view to the establishment of colonies. In such cases the present restrictions on expenditure need not delay the preparation of the necessary plans for the complete colony or the immediate erection of one or more self-contained villas. When the restrictions are removed these authorities will then be in a position to proceed without delay.

Training Centres.—The restriction of capital expenditure makes it all the more important that local authorities should develop fully all methods of community care. This necessitates the employment of trained supervising officers for defectives on licence or under guardianship or supervision, and of trained supervisors in day training centres. The advantages of centres for the training and employment of defectives are discussed in a later section of this Report (p. 72). In comparison with institutional care the cost

involved is small. There is no need for specially erected buildings. Good lighting and ventilation and adequate sanitary conveniences are necessary, but provided that there are good facilities for transport, the most suitable accommodation can often be found in a poor district where rents are low. No centre is self-supporting, but in some places, notably in Leeds and Staffordshire, the profits on the sales go some way to cover the costs. The choice of work is inevitably somewhat limited, and the work suitable for defectives is also sometimes that which can be done by the blind. We hope that in any area where there is a danger of overlapping or of unfair competition the Association for the Blind will be consulted and a mutual agreement arrived at about the work undertaken.

Research and Diagnosis.—Mental deficiency institutions have, hitherto, lagged behind mental hospitals in research and scientific work. We are all the more glad, therefore, to record that, thanks to the Darwin Trust, with the support of the Medical Research Council, an important scheme of research has been begun at the Royal Eastern Counties Institution. It is also satisfactory to learn that at Stoke Park Colony good progress is being made with the systematic physical examination of the patients. Under the energetic direction of Professor Berry, and with the cordial co-operation of the Warden, a team of consultants drawn from the Bristol University Medical School are making a careful examination of every inmate. Many defectives exhibit some physical weakness or defect, and it is not infrequently the case that some unrecognized and untreated disability produces misbehaviour, which is aggravated by the mental defect but is primarily due to the irritation caused by the physical condition. The employment of visiting consultants in the State Institution at Rampton has shown that the successful treatment of hitherto undetected eye and ear, nose or throat conditions, has resulted in marked improvement in conduct and self-control. But apart from the directly beneficial results of this detailed physical examination, we believe that the work now in hand at Stoke Park may prove to be of wider value. An intensive study of the relation between mental and physical defect may throw light on the causation of mental deficiency. In any case this association between a mental deficiency colony and a medical school deserves the warmest encouragement.

We recognize that few colonies are so fortunately situated in proximity to a medical school as to be able to undertake a scientific enquiry of this character, but we would take this opportunity of emphasising the importance in all institutions for defectives of a periodical routine physical examination, particularly in the case of children. Defectives in general are unable to give any clear account of any pain or discomfort from which they are suffering, and in the absence of any subjective account of the patient's symptoms routine examination affords the only chance of

detecting the onset of disease and of dealing with it in the early stage before the grosser manifestations show themselves. One precaution which can easily be taken even in the smallest homes is to weigh the children regularly. Any case of continued loss of weight should be immediately investigated, and in this way diseases such as tuberculosis may be detected in comparatively early stages. At present we fear that much disease remains unnoticed until it has become so far established that it can no longer be ignored. The Regulations require that all patients shall be physically examined at least once in six months, and experience convinces us that it is of the greatest importance that this Regulation should be strictly observed.

Staffing.—Mental Deficiency colonies as a whole are understaffed medically, and it is all the more important for this reason that the medical officers should be relieved as far as possible of administrative or other non-medical work which can be undertaken by lay assistants. At present there is a good deal of work devolving upon the medical staff which could be done more economically and no less efficiently by trained social workers. For example, in certain colonies, the task of finding suitable guardians for patients sent out on licence, which occupies much time and does not require medical training, is undertaken by the medical superintendent, though it is work which, subject to his general direction, could quite well be undertaken by a trained and experienced social worker. The development of guardianship societies and of voluntary associations, to whom this work is often deputed, is much to be desired, or in certain large institutions consideration might well be given to the appointment of a social worker on the institution staff. Another direction in which the medical staff might be relieved is in the carrying out of intelligence tests. In the United States this work is largely done by trained psychologists who work in co-operation with, and under the general direction of, the doctor, but who relieve him of the burden of detailed tests. These tests call for the exercise of care and patience and they demand accurate observation, but in many respects the task is more closely related to teaching than to medicine, and in the larger colonies some measure of specialisation on these lines would make for economy and efficiency. We recognize that this is not the time to expand existing staffs, but in the case of growing colonies, where some expansion is inevitable, an experiment on the American lines seems to us well worth consideration.

Where some strengthening of the medical staff is contemplated it might be worth while to examine the possibility of employing a young graduate in a post analogous to that of a house physician at a general hospital. Young men who are inclined to specialize in this branch of medicine, which at present offers excellent prospects, would find such a "house" appointment a means of

obtaining valuable experience, and the cost to the institution would be limited to the cost of board and lodging and a more or less nominal salary. In former years we have urged the importance of establishing post graduate courses in this branch of psychological medicine, but where this is at present impracticable the creation of a few posts of house physician offers a relatively inexpensive substitute. In one mental hospital the employment of undergraduate students as unpaid clinical assistants has been tried with a considerable measure of success, but we believe that the graduate house physician would be more valuable to the colony.

CHANGES IN THE BOARD.

In the year under review, our Board lost the services of Dr. Rotherham, who ceased to be a Medical Senior Commissioner on his appointment to be a Lord Chancellor's Visitor in succession to Sir Robert Armstrong-Jones. Dr. Rotherham came to the Board in 1913 with a well-deserved reputation for successful administration as Superintendent of the Darenth Colony. During his term of office as Commissioner he further enhanced his reputation, and there was no one whose judgment on practical problems of administration was more frequently sought or more generally respected. We wish him every success in his new sphere. His place as Medical Senior Commissioner has been taken by Dr. W. Rees Thomas, who has been the Superintendent of the State Institution at Rampton from its inception in a disused criminal lunatic asylum until it has developed into one of the largest and certainly one of the best equipped and most efficient colonies in the country. His success in handling the most difficult, and it should be added the most dangerous, types of defectives of both sexes marks him out as an acknowledged authority in this branch of the Board's work.

We have also lost a former colleague of many years' service by the death in October last of Sir Marriott Cooke. He was appointed a Commissioner as long ago as 1898, and during part of the war he was Acting Chairman of the Board. After his retirement in 1921 he continued to give us the benefit of his great experience by serving as an Honorary Commissioner until the end of 1930, when the Board was reconstituted under the Mental Treatment Act. He was indeed one of the last Honorary Commissioners. None who served with him could fail to appreciate his high integrity and his conscientious devotion to the work to which all his energies were consecrated.

During this year we have also lost the services of Dr. Bedford Pierce, who after his retirement from The Retreat at York, where for many years he was a most successful Superintendent, accepted a temporary appointment as Commissioner in 1929. Unfortunately Dr. Bedford Pierce has not found his strength equal to the heavy

strain of visitation work, and to our great regret he resigned on grounds of health in September last. One of the best liked and most respected psychiatrists in the country, Dr. Bedford Pierce will be much missed. His kindliness and genial manner endeared him to all with whom he came in contact, and we hope that his health will soon be restored.

The end of this year also saw the retirement of Mr. O. E. Dickinson, who had been the Secretary of the Board since 1912. His courtesy and his readiness to help all who came to him won him a multitude of friends and he will be greatly missed. He has been succeeded as Secretary by Mr. P. Barter, who was appointed to be Joint Secretary in August 1930.

I.—MENTAL DISORDERS.

(Lunacy and Mental Treatment Acts, 1890–1930.)

In view of the fact that the statistics in the present Report include for the first time references to voluntary and temporary patients under the Mental Treatment Act, a few preliminary observations are necessary by way of explanation.

Hitherto in our Reports medical statistics have been confined mainly to certified patients—with occasional indications that in addition thereto a stated number of “voluntary boarders” had been admitted or remained under care. These voluntary cases were not included in the statistics relating to recovery, discharges or deaths. Accordingly, the results of a good deal of valuable treatment and the recording of medical information were not reflected in our statistics. This was of less moment so long as the admission of voluntary cases was confined to Registered Hospitals and Licensed Houses, the admissions into which have comprised only some 7·6 per cent. of the total. We propose in future to include all three categories—voluntary, temporary and certified—in these medical statistics. It is for this reason that, while it has been necessary to prescribe the keeping of a Civil Register for each category, all three are to be entered up in one Medical Register.

In previous Annual Reports patients have been divided into the statutory classes Private* and Rate-aided†, with mention where necessary of the few classed as Criminal. Under “Class”, we propose to continue the use of these three terms. For statistical review, the position has become somewhat complicated by the fact that, under the Mental Treatment Act, each of the classes Private and Rate-aided is divisible, according to status, into three categories—voluntary, temporary and certified. Again, although voluntary patients have been admissible into Registered Hospitals and Licensed Houses, and although in some of these institutions they have outnumbered those admitted under certificates, they have not been included hitherto in figures dealing either with Distribution or with the Movement of Patients. In this Report and for the future, while making due allowance under these heads for both Class and Status, we shall try to limit any consequential elaboration of the figures to such as seems of real value and interest, and to preserve in any fresh statement of figures, material for purposes of comparison as between the periods before and after the new Act came into operation.

NUMBERS UNDER CARE.

On 1st January, 1932, the number of persons suffering from mental disorder notified as under care in England and Wales

* “Private” patient means a patient who is not rate-aided.

† “Rate-aided” patient means a person wholly or partly chargeable to a County or Borough.

was 146,696, an increase of 1,494 during the preceding year ; the average annual increase for the five years ending 1st January, 1932, being 1,855. In comparing the figures in the whole of this section of the Report with those published in previous Reports it should be noted that this year for the first time voluntary and temporary patients are included ; and, for the purpose of comparison, the numbers for the earlier years have been corrected by the inclusion of voluntary cases belonging to those years, which had hitherto not been included.

The percentage distribution of the sexes—males 44·1, females 55·9—was exactly the same as a year ago, and has not been affected by the inclusion of voluntary and temporary patients.

The increased number of notified patients has no necessary connection with the incidence of mental disorders in the general population, being merely the increase shown by the excess of the admissions over the combined deaths and discharges. It is desirable to emphasize this fact on account of the erroneous deductions that are sometimes drawn from such increases.

Summary of Extent to which Voluntary In-patient Treatment and Temporary Treatment were used during 1931.

Of the total direct admissions (24,212) into all forms of care, 14 per cent. were received as voluntary and 2 per cent. as temporary patients—84 per cent. being admitted under Order.

The Maudsley Hospital, the Hull Royal Infirmary and one Nursing Home received voluntary patients only, and during 1931 admitted 629 patients of this status. At the establishments to which both voluntary and temporary patients, but no certified cases, were admissible—of which there were one Voluntary General Hospital and 8 Nursing Homes—45 patients were received, of whom 78 per cent. were of the voluntary and 22 per cent. were of the temporary status.

Of the places where patients of all three grades are received*, the highest proportions of voluntary admissions, as might have been expected, were found at the Registered Hospitals and Licensed Houses, where patients of this status have been treated for many years : thus, of 940 patients admitted to the former and of 1,175 admitted to the latter, no less than 65 per cent. and 50 per cent. respectively were voluntary patients. In contrast with these high proportions, 7 per cent., which represents the number of voluntary patients among 20,945 admissions to the County and Borough Mental Hospitals, may look small. It, however, should not be forgotten that twenty years ago, which is no long period when dealing with changes in firmly established procedure, the percentage of voluntary admissions to the Registered Hospitals and Licensed Houses was only 19 per cent. ; moreover, as may be

* Subject, as already explained in respect of temporary treatment at the Licensed Houses, to the approval of the Board of Control.

SUMMARY OF PERSONS SUFFERING FROM MENTAL DISORDER, 1ST JANUARY, 1932.

B.—CLASSIFIED ACCORDING TO STATUS.

WHERE MAINTAINED on 1st January, 1932.	VOLUNTARY.			TEMPORARY.			CERTIFIED.			TOTAL.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
In Institutions provided by Local Authorities :—												
County and Borough Mental Hospitals	398	432	830	44	115	159	53,312	67,014	120,326	53,754	67,561	121,315
Other Premises	77	111	188	—	—	—	—	—	—	77	111	188
In Registered Hospitals	205	258	463	5	26	31	757	1,186	1,943	967	1,470	2,437
In Licensed Houses :—												
Metropolitan	57	100	157	6	15	21	358	647	1,005	421	762	1,183
Provincial	73	146	219	8	11	19	656	907	1,563	737	1,064	1,801
In Hospitals and Nursing Homes approved under the Mental Treatment Act :—												
Hospitals	—	—	—	—	—	—	—	—	—	—	—	—
Nursing Homes	4	17	21	2	3	5	—	—	—	6	20	26
In Naval and Military Hospitals	—	—	—	—	—	—	266	—	266	266	—	266
In Criminal Lunatic Asylum (Broadmoor)	—	—	—	—	—	—	623	204	827	623	204	827
In Public Assistance Institutions	—	—	—	—	—	—	6,328	8,202	14,530	6,328	8,202	14,530
In Private Single-Care	—	—	—	—	—	—	86	252	338	86	254	340
In Outdoor Relief	These headings, but the Certified.	2 persons are not for convenience are included among these	2	—	—	—	1,411	2,372	3,783	1,411	2,372	3,783
TOTAL	814	1,066	1,880	65	170	235	63,797	80,784	144,581	64,676	82,020	146,696
OF TOTAL { Private	442	658	1,100	28	89	117	8,160	5,876	14,036	8,630	6,623	15,253
Rate-aided	372	408	780	37	81	118	54,960	74,687	129,647	55,369	75,176	130,545
Criminal	—	—	—	—	—	—	677	221	898	677	221	898

gathered from a perusal of the section dealing with the County and Borough institutions, some of them, notably Wakefield, East Sussex, Leicester City, Portsmouth, Cardiff, Ipswich and the North Riding—by percentages ranging from 20 to 33, have shown what may be expected towards promoting voluntary treatment and diminishing certification.

Voluntary Patients among Protracted Cases of Mental Disorder.—As already indicated, the status of temporary patients, so far as duration of mental disorder is concerned, in general implies disorder of recent origin. There is a tendency, when discussing arrangements for the proper classification of patients, on the one hand to regard voluntary patients as also necessarily recent in type, and on the other hand to think of certified patients as necessarily suffering from confirmed mental disorder. Both these assumptions are wrong. With regard to voluntary treatment, any such notion overlooks the facts that no limit is imposed as to the duration of treatment and that there are many patients who, although they have become tractable, trustworthy and industrious, have not recovered and are likely to require institutional treatment for a long time, perhaps for many years. Many of these patients understand the position and are glad to remain. There is no reason why most of such cases should not be graded as voluntary patients, a grant of status which, besides adding to their sense of self-respect, would promote a sense of freedom and absence of institutional restriction : a something to win and to live up to. We have in mind the large number of patients to whom parole is accorded, many of whom might be considered fit to be graded as voluntary patients.

Temporary treatment without certification is such a novel form of procedure that it is hardly profitable yet to supply much in the way of statistics as to its use. During 1931, one Voluntary General Hospital and eight Nursing Homes were approved for its use : into these establishments some 45 patients were received, of whom 35 were of the voluntary and 10 of the temporary status, the percentage distribution in them of these two categories being respectively 78 and 22. Into the 45 Licensed Houses approved for its use, 9 per cent. of the total number (1,205) of direct admissions thereto were of the temporary status, the corresponding percentage for the Registered Hospitals (where the direct admissions were 940) being 6. At 43 of the County and Borough mental hospitals, including some of the largest in the country, no temporary patient was admitted : it therefore is not surprising that, of the total direct admissions to these public mental hospitals, only 2 per cent. were of this status. However, at five of them—Ipswich and City of London each with 10 per cent., Hereford and Scalebor Park each with 11 per cent., and Derby Borough with no less than 26 per cent.—a very good beginning was made.

CLASS, STATUS AND DISTRIBUTION.

Class.

Private patients on 1st January, 1932, numbered 15,253 (males 8,630, females 6,623). There was an increase of 197 in the private voluntary cases, which, with the addition of 117 temporary patients and a decrease of 368 certified patients, yielded a net decrease of 54 in this class. Included here are 5,031 Service and ex-Service patients—208 fewer than a year ago.

Patients in the Naval and Military Hospitals (Yarmouth 217, Netley 49) are also included among the private patients, as are the 41 persons found of unsound mind by inquisition who were resident in institutions. There were in addition 83 persons (males 54, females 29) so found by inquisition who, not being resident in institutions, are not notified to us and so do not fall within the scope of our statistics. The total number of these inquisition cases continues to show a steady decrease year by year, due to the lessened use made of this mode of procedure.

Rate-aided patients on 1st January, 1932, numbered 130,545 (males 55,369, females 75,176) or 89·0 per cent. of all the notified patients. They increased by 1,561 during 1931, as compared with an average annual increase of 1,905 during the last five years.

Criminal patients on the same date numbered 898 (males 677, females 221), a decrease of 13 during the year.

Transfers from Class to Class.—During 1931, 658 rate-aided patients (males 316, females 342) were transferred to the private class; 250 private patients (84 males and 166 females) were transferred to the rate-aided class; and 62 criminal patients were retained and classed as rate-aided patients on the expiry of their sentences or on their discharge as criminals.

Status.

On the 1st January, 1932, at the end of the first year of the operation of the Mental Treatment Act, 1930, the following patients were under care in each status:—

Status.					Males.	Females.	Total.
Voluntary	...	...	...	...	814	1,066	1,880
Temporary	...	...	...	...	65	170	235
Certified	...	...	...	...	63,797	80,784	144,581

Regradings to another Status.—During the year 627 changes in status within the institutions took place as follows :—

From—	Voluntary.	Temporary	Certified.
Voluntary to	—	55	205
Temporary to	82	—	47
Certified to	225	13	—

Distribution.

The distribution of all patients on the 1st January, 1932, can be seen by reference to the two Summaries (A and B) on pp. 20 and 21, but it may be pointed out that nearly 83 per cent. of them were resident in County and Borough Mental Hospitals, and that nearly 45 per cent. of the voluntary patients were resident in Registered Hospitals and Licensed Houses.

MOVEMENT OF PATIENTS.

Admissions, Discharges, Transfers to other Care, and Deaths in 1931.—Owing to the absence of detailed information of the movement of the persons suffering from mental disorder in Public Assistance Institutions and of those in receipt of Outdoor Relief, particulars as to the persons in these forms of care are not included below.

The subjoined statement includes patients of each status (voluntary, temporary and certified) :—

Resident on 1st January	...	...	...	...	126,571
Direct Admissions	...	...	...	...	24,212
Indirect Admissions (excluding regradings)	...	...	...	...	2,282
					153,065

Discharged and Departed :—

Recovered	...	...	...	...	7,650
Relieved	...	...	...	...	4,332
Not Improved	...	...	...	...	1,110
*By operations of law	...	...	...	...	243
“ Not now Insane ”	...	...	...	...	11
Transferred (under order) to other care	...	...	...	...	2,177
Died	...	...	...	...	9,159
Remained at end of year	...	...	...	...	128,383
					153,065

* Either by reason of irregular admission documents, lapsing of reception orders (s. 38, Lunacy Act, 1890), or discharges under s. 85.

The daily average number resident was 126,902 (males 56,400, females 70,502)—the proportion of those resident in County and Borough Mental Hospitals being 94·6 per cent.

Direct admissions were 24,212 (males 10,898, females 13,314), of whom 86·5 per cent. were admitted to County and Borough Mental Hospitals. The proportion per cent. of these admissions in each status was—voluntary, 13·9 ; temporary, 2·3 ; and certified, 83·8.

The ratio of admissions per 10,000 of the population (aged 16 years and upwards) of England and Wales was 8·12 (males 7·77, females 8·43). This ratio shows an increase of 0·98 per 10,000 on that of the previous year, but, if the voluntary admissions are included for 1930, the ratio shows an increase of only 0·30.

First admissions during 1931 numbered 19,165 (males 8,862, females 10,303), or 79·2 per cent. of all the direct admissions. Of these first admissions 2,693 (14·0 per cent.) were voluntary patients, 494 (2·6 per cent.) were temporary, and 15,978 (83·4 per cent.) were certified.

Discharges and Departures—that is, certified and temporary patients discharged, and voluntary patients who departed, from statutory care (as recovered, relieved or not improved), numbered 15,523 (males 6,833, females 8,690). Of these, 7,650 were discharged as recovered, yielding a recovery rate, calculated on the direct admissions, of 31·6 (29·5 for males, 33·3 for females). The discharges as relieved and not improved numbered respectively 4,332 and 1,110 ; and, if these and the 11 discharged on admission as not now insane and the 129 cases discharged after escape (s.85) are added to the recoveries, it shows that the total absolute discharges and departures during the year were 54·6 per cent. of the direct admissions.

Deaths numbered 9,159 (males 4,373, females 4,786). They were 846 more than in the previous year ; and the death-rate (7·2 per cent. of the daily average number resident) was 0·5 above the rate for 1930. The rate for males was 7·8 per cent., and for females 6·8.

Transfers to other Care, etc.—During the year, 2,282 patients were transferred to another institution or to or from single-care, or were (in a few instances) indirect admissions following discharge by operation of law. Such cases, as well as the regradings detailed on p. 24 are technically termed *indirect admissions*, and call for no further comment.

Numbers remaining under Care.—The number of patients remaining under care (with the exception of those in Public Assistance Institutions and those in receipt of Outdoor Relief) on the 1st January, 1932, was 128,383 (males 56,937, females 71,446), an increase of 1,812 patients during the year.

COUNTY AND BOROUGH MENTAL HOSPITALS.

*(Ninety-eight in number.)*1. *Accommodation.*

On the 1st January, 1932, the accommodation in recognized bed space in County and Borough Mental Hospitals was 118,644 (male 52,886, female 65,758). During 1931, as the result of numerous small additions and re-arrangements, increased accommodation had been provided for 177 males and 815 females. Owing, however, to the increase in the numbers resident during the year, the number of patients on the 1st January last in excess of the prescribed accommodation was 858 males and 1,813 females.

The increase in patients resident during 1931 was 1,576 (males 605, females 971), as compared with an increase during 1930 of 2,414 (males 945, females 1,469), and with an average annual increase for the last 5 years of 2,117 (males 932, females 1,185).

The smaller increase for 1931 was due to the facts that there were 728 more deaths and that over 200 Service patients were removed from Storthes Hall to the Royal Naval Hospital, Yarmouth, and to The Old Manor, Salisbury, and were thus no longer included in the numbers in County and Borough Mental Hospitals. An increase of 1,346 in the direct admissions was neutralized by an increase of 1,300 in the departures and discharges; the increase in these numbers was due to a considerable extent to the fluidity of movement amongst the voluntary and temporary patients now received in these institutions.

The position with regard to accommodation must, however, be regarded as very serious, particularly as the urgent need for economy has led to the postponement of a number of schemes which were designed to provide some 630 additional beds.

We are, however, pleased to report that in November last, we were able to approve an agreement for union between the County Boroughs of East Ham and Southend-on-Sea for the purpose of providing a joint mental hospital to serve the needs of these areas. The intention is, in the first instance, to provide accommodation for 850 patients.

Further, the mental hospital at Sketty, Swansea, to provide 610 beds for the patients of the County Boroughs of Swansea and Merthyr Tdyfil is now nearing completion.

The following were the more important extensions and adaptations—estimated to provide some 2,927 beds—which received approval during 1931 :—

Hospital.	Nature of Scheme.	No. of patients' beds provided
Berks	Adaptation of medical superintendent's old house	26
Devon	Nurses' home	120
Dorset	New dormitory at Herrison House ...	16
Durham... ..	Admission hospital	100
Lancaster	Conversion to patients' use of other accommodation	70
Lincoln C. : Lindsey and Holland Divisions) ...	Admission hospital	90
London C. : Cane Hill	Nurses' home	100
Horton	Nurses' home	126
Middlesex : Springfield	Extensions	217
Porters Park... ..	First section of new hospital	1,046
Nottingham C....	Two villas (F.) and Nurses' home ...	140
Salop	Adaptation of Oxon Hall	40
Sussex W.	Admission hospital	80
Rubery Hill	Conversion of isolation hospital ...	22
Brighton	Admission hospital (<i>postponed</i>) ...	50
Bristol	Adaptation of orthopædic hospital ...	33
Croydon	Four villas for chronic patients ...	200
Derby C. B.	Nurses' home	30
Gateshead	Conversion of isolation hospital ...	11
West Ham	Extensions	410

2. Use of Voluntary and Temporary Treatment.

For these important institutions, which accommodate more than 80 per cent. of the total number of persons notified as suffering from mental disorder and into which over 90 per cent. of the total direct admissions annually are received, the year 1931 must remain a memorable one. Until that year, since their first establishment, no patient had ever been received into them except under Order and certificates. The first cases not under Order and certificates to be received into a County or Borough Mental Hospital* were two patients, both of them rate-aided, who were admitted on the 1st of January, 1931 ; one of them, a voluntary patient, at Springfield (Middlesex) and the other, a temporary patient, at Mickleover (Derby C.).

It is of interest to record the extent of the response made

* Apart from those received into the City of London Mental Hospital under the City of London (Various Powers) Act, 1924.

during the first year's operation of the Mental Treatment Act to the opportunity therein given to receive patients without certification, either upon their own voluntary application or for temporary treatment. Of those hospitals which have made a commencement in receiving voluntary patients, 27 did so to the extent of less than 5 per cent. of their direct admissions, 20 in proportions ranging from 5 to 9 per cent., 15 (Chester, Parkside, Severalls Herts, Narborough, Springfield (Middlesex), Wells, Cheddleton Suffolk, Winson Green, Rubery Hill, Newport, Norwich, Nottingham City, and York City) did so to the extent of 10 to 14 per cent. which, having regard to all the circumstances, was not a bad beginning. Seven (Devon, Gloucester, W. Sussex, Isle of Wight, Exeter, Plymouth and Sunderland) did still better, namely in proportions varying from 15 to 19 per cent. ; and at seven, the proportion of voluntary patients among the direct admissions varied from 20 per cent. at Wakefield and E. Sussex to 22 per cent. at Leicester City, 28 per cent. at Portsmouth, 31 per cent. at Cardiff, 32 per cent. at Ipswich and no less than 33 per cent. at the North Riding. These are proportions which leave no doubt but that before long full advantage of voluntary treatment will be taken at the County and Borough Mental Hospitals.

As we said in an earlier paragraph, the temporary procedure is everywhere so much in its infancy that no good purpose would be served by setting out its use in any great detail : it will suffice, on this occasion, to say that in 37 of these institutions it was used in a few cases amounting in each to less than 5 per cent. of the admissions ; at 13 it was used in percentages ranging from 5 to 9 inclusive ; and at five it was used for 10 per cent. and upwards of the admissions—at both Ipswich and the City of London in 10 per cent., at both Hereford and Scalebor Park in 11 per cent., and at Derby Borough in as many as 26 per cent. of the direct admissions.

3. *Movement of Patients.*

On the 1st January, 1932, the County and Borough Mental Hospitals contained 121,315 patients, as follows :—

Status.					Males.	Females.	Total.
Voluntary	...	...	...	...	398	432	830
Temporary	...	...	...	...	44	115	159
Certified	...	...	...	...	53,312	67,014	120,326
Total	...	...	...	...	53,754	67,561	121,315

The number of patients in each class was—private 9,204 ; rate-aided 112,039 ; and criminal, 72.

Direct Admissions.—During 1931 there were 20,945 direct admissions as shown below :—

Status.					Males.	Females.	Total.
Voluntary	...	...	...	...	708	787	1,495
Temporary	...	...	...	...	133	246	379
Certified	...	...	...	...	8,530	10,541	19,071
Total	...	...	...	...	9,371	11,574	20,945

First attack Cases.—Owing to the absence of full and reliable history, these cannot be given, but, it may be stated that, of the direct admissions in 1931, rather more than 21 per cent. (voluntary 23 per cent., temporary 13 per cent., and certified 21 per cent.), had previously been dealt with under the Lunacy and Mental Treatment Acts.

Departures and Discharges.—The following were the absolute departures and discharges during 1931 :—

At time of discharge.		Males.	Females.	Total.
Status.	Mental Condition.			
Voluntary	{ Recovered ...	154	203	357
	{ Relieved ...	153	146	299
	{ Not Improved	92	86	178
Temporary	{ Recovered ...	23	37	60
	{ Relieved ...	7	20	27
	{ Not Improved	8	5	13
Certified	{ Recovered ...	2,506	3,751	6,257
	{ Relieved ...	1,164	1,705	2,869
	{ Not Improved	322	256	578
Total ...		4,429	6,209	10,638

The percentage of total discharges (recovered, relieved, and not improved) to the admissions was 50·8 and of *recoveries* alone was 31·9 (males 28·6, females 34·5).

Deaths.—During the year, 8,585 patients (4,144 males and 4,441 females) died.

The proportion per cent. of deaths to the daily average number of patients resident was 7·2 (males 7·8 and females 6·7). This was 0·5 above that of the previous year, but 0·5 below the mean percentage (7·7) for the preceding 10 years.

The number of *post-mortem examinations* was 5,724, being 66·7 per cent. of the deaths. The proportion of these examinations varied from 90 per cent., or over at the Parkside, Cumberland,

Monmouth, Notts County, Burntwood, West Sussex, Barnsley Hall, Wadsley, East Riding, Winson Green, Brighton, Cardiff and Leicester Borough Mental Hospitals to such low percentages as 10 (Carmarthen) and 9.9 (Portsmouth).

Service Patients.—On the 1st January, 1932, the number of Service patients resident in County and Borough Mental Hospitals was 4,375, a decrease of 303 during the year. This large decrease was due to the closing of the Ministry of Pensions Wing at the Storthes Hall Mental Hospital referred to on p.26.

On the same date there were also 402 ex-Service patients (19 less than a year previously), the cost of whose maintenance is defrayed by our Board from a special Exchequer grant (see 11th Report, p. 31).

4. *Changes among Medical Superintendents.*

County Palatine of Lancashire (Whittingham).

Dr. R. M. Clark, who for 33 years had been a member of the medical staff here, and who for the last eleven years of this period had occupied the position of Superintendent, retired from this post in May, 1931. Whittingham is the largest mental hospital in the kingdom ; and, because of that fact as well as for other reasons, its administration, medical and general, imposes heavy responsibility and onerous duties upon the Superintendent. These duties were carried out by Dr. Clark with conspicuous ability and courage, coupled with a manifest love of his work and personal care for the individual welfare of his patients and staff. His tenure of office, besides witnessing many improvements to the Hospital, will always be remembered, too, in connection with the introduction into this country of the treatment of General Paralysis by induced Malaria. It was upon his initiative that, in 1922, this method of treatment, which had been developed in Austria, was given a trial at Whittingham, where, as is well known, its success was the forerunner of the application of similar treatment in many other places in this country.

As his successor, the Lancashire Mental Hospitals Board, after advertizing the post, promoted the Deputy Superintendent, Dr. Alistair R. Grant (M.D. Aberd.) who, including the period during which he was absent on war-service, had been a member of the medical staff for 14 years, and had previously had some valuable general hospital experience at Aberdeen.

Derby County.

Dr. George H. Bartlett, who for 24 years had held resident posts in mental hospitals, including eight years as Superintendent here and a like period in a similar position at Exeter, resigned in March, 1931. After advertizing the vacancy, the Committee of Visitors filled it by the appointment of Dr. Edwin L. Hopkins,

M.C. (M.R.C.S. Eng., L.R.C.P., Lond., D.P.M., D.P.H.) who for nearly two years had been Deputy Superintendent at West Park, having had previous experience in three other mental hospitals (Bexley, Hanwell and Ewell) belonging to the London County Council, in all amounting to nearly ten years.

London County Council (Cane Hill).

Dr. Samuel Charles Elgee, O.B.E., Lt.-Col. R.A.M.C., resigned, to our regret, on account of ill-health in June, 1931. Commencing at Middlesbrough, for 33 years he had devoted his best energies to the treatment of mental disorders. Of this period close upon thirty years were spent in the service of the Council, at The Manor, Colney Hatch, Ewell and Cane Hill, where he was Superintendent for twelve years. During the latter part of the time that The Manor was a war-hospital and consequent upon the retirement through illness of the late Dr. W. Ireland Donaldson, the duties of Officer Commanding at that hospital devolved upon and were ably carried out by Lt.-Colonel Elgee, for which services he was made an Officer in the Order of the British Empire (Military Division). It is our hope that freedom from anxieties will restore his health and enable him to enjoy a long and well-earned retirement.

As his successor, the Council appointed Dr. George A. Lilly, M.C. (M.A., M.D.Cantab., M.R.C.S.Eng., L.R.C.P.Lond., D.P.M.), who for rather more than five years had been Deputy Superintendent at Banstead and who, besides holding a resident post at the general hospital of his medical school, had had experience at three other of the Council's hospitals (Hanwell, Cane Hill and Bexley) and at Chartham Mental Hospital.

London County Council (Horton).

Lt.-Colonel John Robert Lord, C.B.E., M.D., F.R.C.P.E., to the regret of our Board and that of the wide circle of those, at home and abroad, who knew him and his work, died on the 9th of last August. For nearly 24 years he had been Superintendent of Horton Mental Hospital and, including the periods spent as a member of the medical staffs at other mental hospitals (Carmarthen, Hanwell and Bexley), he in a very real sense had given 33 years of his life to the advancement of Psychiatry. Of this lengthy period, $4\frac{1}{2}$ strenuous years were spent as its Commanding Officer when the institution was the Horton (County of London) War Hospital, during which time it probably was that the seeds were laid of the illness, against the phases of which he so bravely and often successfully fought, which ultimately proved fatal. For his war hospital and other ancillary services he in 1918, was created a C.B.E. Within the limits of space at our disposal it is impossible here to do justice to Dr. Lord's many-sided activities : allusion to the following must suffice. It was during his term of office as Superintendent and largely by his stimulus that numerous

improvements were effected at Horton, especially in the means for classification and treatment of recent cases on modern lines. In 1926 he was President of the Royal Medico-Psychological Association and in the pages of its official organ—*The Journal of Mental Science*, which for many years he edited—and by his numerous contributions to medical literature he exercised a wide influence, always for good. He took a keen interest in the affairs of the National Council for Mental Hygiene, of which he was an honorary joint-secretary, and was one of the most active of the delegates at its International Congress at Washington in the May preceding his death. He lectured at The Royal Free Hospital for Women, and was mainly instrumental in creating a valuable link between that medical school and his own hospital. In September, 1930, he was appointed by the Minister of Health to be a member of the General Nursing Council. Of remarkable personality and energy, he was possessed with something of the fire of a pioneer. Besides a real affection for his patients and a great sympathy with their illness, the fine order and condition in which Horton was at the time of his death is testimony to his power of getting the best out of his staff.

As Dr. Lord's successor, the Council have appointed Dr. William D. Nicol (M.B.Lond., M.R.C.S., L.R.C.P., D.P.M.) who, for seven years, had been a member of the medical staff at Horton, for the past three of which he had held the position of Deputy Superintendent, and who was seconded for a time to the medical department of the Ministry of Health in relation to the treatment of general paralysis by induced malaria. Previously, after holding a resident post at St. Bartholomew's Hospital and a temporary commission in the Royal Navy, he had had experience at Hanwell Mental Hospital, the staff of which he joined in 1920.

Cornwall.

Dr. Francis Dudley, at the end of last September, retired from the post of Superintendent which he had occupied for 17 years, having been in all for 34 years a member of the Hospital's medical staff. Throughout the whole of this period, during which time he saw his Hospital grow from under 800 to 1,200 beds, he devoted his best energies in a whole-hearted way to the duties of his post, to the advancement of his Hospital, and to the welfare of his patients, to whom he showed a kindly sympathy and of whom he had an individual knowledge to a remarkable degree. In his succession, the Committee promoted the Deputy Superintendent, Dr. W. G. Rivers (M.B.Edin.) who, after a short period of service at Ewell Colony, had been a member of the Bodmin Mental Hospital medical staff for 25 years.

Hereford.

Dr. John Grimmond Smith retired at the end of last November. He had been a member of the Hospital's medical staff for over 13

years, for the last 11 of which he had occupied the post of Superintendent. To the duties attached to these positions, he devoted his best energies and was always solicitous for the welfare of his patients. Commencing with service in one of the Scottish mental hospitals and including posts in four other mental hospitals, he had devoted in all some 40 years of his life to the treatment of mental disorders. After advertizing the post, the Committee of Visitors appointed Dr. G. W. T. H. Fleming (M.R.C.S.Eng., L.R.C.P.Lond., D.P.M.), the Deputy Superintendent at Dorset Mental Hospital. He had occupied that post for $4\frac{1}{2}$ years, as well as a like position at Sunderland for over 5 years, besides holding for a short period a resident post at Claybury and at the Royal Victoria Infirmary at Newcastle-upon-Tyne. Dr. Fleming is also Assistant Editor of the *Journal of Mental Science*.

Isle of Wight.

Dr. William J. Adams Erskine resigned from the post of Superintendent which he had filled with ability and success for 15 years. Including service at Wakefield, Lancaster and Nottingham City he had devoted in all 35 years of his life to the treatment of mental disorders in public mental hospitals. We are glad to know that his experience thus gained is still available, and that he has assented to undertake the duties of Medical Officer at Shaftesbury House, a provincial lincensed house. As his successor, and after advertizing the post, the Visiting Committee have appointed Dr. Charles W. S. Davies-Jones (M.B.Edin.) who for eleven-and-a-half years had been Deputy Superintendent at the Oxford County and City Mental Hospital at Littlemore, on the staff of which he previously had been when it was a War hospital. Dr. Davies-Jones has also had charge of a Neurological Hospital in Scotland.

5. *Finance.*

The total expenditure on the upkeep of the County and Borough Mental Hospitals in England and Wales, and on the maintenance, supervision and treatment of the patients in them, during the financial year ended 31st March, 1931, amounted to £8,239,534, distributed as follows:—

	£
Maintenance	7,012,829
Building and repairs	1,206,263
Land purchased	13,292
Land rented	7,150
	<hr/>
	£8,239,534
	<hr/>

The above figures do not include any expenditure on new institutions as yet unoccupied.

Compared with the preceding financial year, there were increases of £125,377 in the cost of building and repairs and £130 in the amount paid for land rented ; while the cost of maintenance decreased by £16,016 and the outlay on land by £18,709, making a total net increase of £90,782.

Average Weekly Cost.—The average weekly cost per head of maintenance, excluding the cost of repairs, additions and alterations, was as follows :—

	s.	d.
In County Mental Hospitals ..	21	4 $\frac{1}{8}$
In Borough Mental Hospitals ..	24	5 $\frac{3}{4}$
In both taken together	22	1 $\frac{1}{2}$

The items making up the average weekly cost for the last two financial years are contrasted in the following table :—

DETAILS OF THE AVERAGE WEEKLY COST.	County Mental Hospitals.		Borough Mental Hospitals.					
	1929-30		1930-31		1929-30		1930-31	
	s.	d.	s.	d.	s.	d.	s.	d.
Provisions not supplied from in- stitution garden and farm, but procured from outside the institu- tion (including malt liquor in ordinary diet)	4	4	3	10 $\frac{7}{8}$	4	7 $\frac{1}{4}$	4	3
Garden and farm	1	7 $\frac{1}{2}$	1	5 $\frac{3}{4}$	2	4 $\frac{3}{8}$	2	4 $\frac{1}{4}$
Clothing of patients and staff ...	1	0 $\frac{3}{4}$	0	11 $\frac{7}{8}$	1	1 $\frac{3}{8}$	1	1 $\frac{1}{2}$
Salaries and wages (excluding de- ductions for board, lodging, and washing, and deductions under the Asylums Officers' Super- annuation Act, 1909)	9	6	9	6 $\frac{7}{8}$	10	6 $\frac{5}{8}$	10	8 $\frac{1}{8}$
Pensions, gratuities, &c. (charged to maintenance account) ...	0	10 $\frac{5}{8}$	0	11 $\frac{1}{2}$	0	9 $\frac{5}{8}$	0	10 $\frac{3}{4}$
Necessaries (<i>e.g.</i> , fuel, light, washing, &c.)	2	2 $\frac{7}{8}$	2	2 $\frac{5}{8}$	2	10 $\frac{5}{8}$	2	10 $\frac{7}{8}$
Surgery and dispensary	0	2 $\frac{5}{8}$	0	2 $\frac{5}{8}$	0	3 $\frac{3}{8}$	0	3 $\frac{1}{2}$
Malt liquor, wine and spirits (not in- cluded in ordinary diet) ...	0	0 $\frac{1}{8}$	0	0 $\frac{1}{8}$	0	0 $\frac{1}{8}$	0	0 $\frac{1}{8}$
Furniture and bedding	0	8 $\frac{7}{8}$	0	8 $\frac{3}{8}$	0	9 $\frac{1}{2}$	0	10 $\frac{1}{4}$
Miscellaneous	2	0 $\frac{1}{8}$	2	0 $\frac{1}{8}$	2	4 $\frac{3}{8}$	2	3 $\frac{3}{4}$
	22	7 $\frac{1}{2}$	22	0 $\frac{3}{4}$	25	9 $\frac{1}{4}$	25	8 $\frac{1}{8}$
Less Moneys received for articles, goods, and produce sold (exclusive of those consumed in the institu- tion)	0	10 $\frac{3}{4}$	0	8 $\frac{5}{8}$	1	3 $\frac{5}{8}$	1	2 $\frac{3}{8}$
NET TOTAL average weekly cost per head ...	21	8 $\frac{3}{4}$	21	4 $\frac{1}{8}$	24	5 $\frac{5}{8}$	24	5 $\frac{3}{4}$

The average weekly cost per head for all mental hospitals showed a decrease of $3\frac{3}{8}$ d. during the year under review, mainly due to a fall in the cost of provisions ; it will be observed by reference to the table above that the cost per head of this item—as compared with the preceding year, was less by $5\frac{1}{8}$ d. in County and by $4\frac{1}{4}$ d. in Borough Mental Hospitals.

Pensions.—The average weekly cost per head of pensions granted under the Asylums Officers' Superannuation Act, 1909, was 1s. $1\frac{7}{8}$ d. There was also a sum of £16,092 paid direct by County and Borough Councils for pensions, granted under the Lunacy Acts of 1890 and previous years, which do not appear on the accounts of the several Visiting Committees. The inclusion of this sum raised the cost per head of pensions, gratuities, etc. to 1s. $2\frac{1}{2}$ d. per week.

6. *Causes of Death during 1930.*

The time that elapses between the receipt of the mortality statistics for any given year and the preparation for publication of our Report for that year is too short to permit of an adequate study of the aggregate figures and the compilation of a complete analysis of returns. The subjoined table, therefore, refers to the deaths that occurred in County and Borough Mental Hospitals during 1930, the equivalent details relating to the year covered by this Report (1931) being not yet available. Some reference, however, will be made, in the section that follows this, to the mortality for 1931 in regard to certain diseases, particular reference to which necessitates the production of the latest possible information. This procedure is in accord with that adopted during recent years.

Causes of Death in the cases of all Patients in County and Borough Mental Hospitals who died during the year 1930. The daily average number of patients resident during the year 1930 was 118,039 (Males, 52,427 ; Females, 65,612).

Cause of Death. (The numerals refer to the International List of Causes of Death as adapted by the Registrar-General for use in England and Wales.)						Number of Deaths.		
						Males.	Fem.	Total.
1.	Enteric Fever	...	...	...	...	9	19	28
10.	Diphtheria	...	...	...	...	—	1	1
11.	Influenza	...	...	...	...	15	24	39
16.	Dysentery	...	...	...	...	9	15	24
21.	Erysipelas	...	...	...	...	14	7	21
23.	Encephalitis lethargica...	...	...	...	...	10	4	14
31.	Tuberculosis of the respiratory system					351	316	667
32-37.	Other forms of tuberculosis	...	...			37	35	72
43-49.	Cancer and other malignant diseases					147	201	348
54.	Pellagra	...	...	...	...	1	1	2
57.	Diabetes	...	...	...	...	17	15	32
74.	Cerebral haemorrhage, apoplexy, etc.					161	187	348
76.	General paralysis of the insane			...	...	651	163	814
77.	Other forms of insanity			...	...	98	132	230
78.	Epilepsy	...	...	...	...	175	109	284
83.	Cerebral softening	...	...	...	...	79	87	166
84.	Other diseases of the nervous system					45	37	82
88.	Acute endocarditis and myocarditis	...				41	85	126
90.	Other diseases of the heart	...	...			536	726	1,262
91.	Diseases of the arteries	...	...			344	332	676
99.	Bronchitis	...	...	...	...	88	98	186
100 & 101.	Pneumonia (all forms)		...	...		354	484	838
113 & 114.	Diarrhoea and Enteritis		...	...		5	17	22
128 & 129.	Nephritis	...	...	...	...	138	208	346
164.	Old age	...	...	...	...	203	294	497
	All other diseases	...	...	...	...	318	341	659
	Violent deaths (including suicide)	...				37	36	73
Total						3,883	3,974	7,857

7.—*Infectious and Allied Diseases during 1931.*

The following table shows the incidence of certain infectious diseases among the patients and staff of County and Borough mental hospitals during the year.

	Patients.			Staff.		
	M.	F.	Total.	M.	F.	Total.
Diphtheria ...	6	17	23	1	10	11
Scarlet Fever	6	29	35	—	11	11
Measles ...	5	5	10	—	1	1
German Measles	17	5	22	—	7	7
Chicken Pox ...	7	14	21	—	1	1
Mumps ...	—	6	6	—	—	—
Puerperal Fever	—	7	7	—	—	—

One man and one boy died from diphtheria. There were no deaths from scarlet fever or measles and there was no case of smallpox.

Tuberculosis.

Incidence.—An appreciable reduction continues to occur in the incidence and the death-rate of tuberculosis. Except for a rise of 0·5 per 1,000 in 1929 and for a fall in 1930 to the figure for 1928, there has been a steady lowering of the number of fresh cases in the last ten years, from 17·1 in 1921 to 7·7 in 1931.

Seasonal Variation in the observed onset of the pulmonary disease is not so well marked as in former years, but is still distinct.

Notifications of fresh Pulmonary cases.

	1930.	1931.
January to June ..	498	445
July to December ..	369	384

A comparison of the figures for both years shows a decrease in 1931 of 53 cases during the first six months, but an increase of 15 in the later part of the year. Some explanation for this autumnal increase of phthisis may be found in the outbreak of influenza in the first quarter of 1931, which during those three months attacked 3,097 patients.

Geographical Distribution.—In the 32 hospitals north of The Wash, there were 394 fresh cases out of a resident population of 41,722, yielding an incidence rate of 9·4 per 1,000. In the 65 hospitals south of that line, with a resident population of 78,329, there were 530 fresh cases; the rate was 6·7.

The average patient population during the year of each hospital in the northern group was 1,304 and in the southern group 1,187.

A few hospitals have maintained a high death-rate over most, if not all, of the last five years; three of them are in the north, (Cumberland, Northumberland and Durham) and one (Oxford) in the south.

Of the twelve hospitals with the highest death-rate, seven belong to the 32 in the northern group while five belong to the 66 more southern ones. Similarly, of twelve hospitals showing the highest incidence rate, or fresh cases, eight are in the north and four in the south.

No fresh cases were found in the mental hospitals of Scalebor Park or Plymouth, but 5 deaths occurred in the latter. There was one fresh case only at Yorks E.R., Canterbury, Gateshead, Ipswich and Croydon hospitals and two only at Barnsley Hall, Exeter, Newport and the City of London hospitals. It is noteworthy that of these eleven hospitals, 8 receive urban patients and one receives only private patients.

The highest incidence occurs in the mental hospitals of the Three Counties (Bedford, etc.) (20·7), Cumberland (21·1), Stafford (24·6), Northumberland (24·5), Notts County (23·2) and Cheddleton (20·0). The fall in the incidence is entirely in the pulmonary form this year ; there has been a rise in the actual number of fresh cases of other forms.

Deaths.—The deaths during 1931 were as follows :—

	M.	F.	T.
Pulmonary form ...	326	290	616
Other forms ...	37	36	73

The death-rate, which was 15·9 per 1,000 patients resident for 1921, fell to 5·7 in the year under review ; but, as will be seen above, even the reduced rate means the deaths of 616 patients from the pulmonary form and of 73 from other forms.

No deaths from this disease occurred in Berks, Ewell, Scalebor Park, Croydon or Exeter mental hospitals ; one only at Kesteven, Wells, Barnsley Hall, Canterbury and Gateshead ; and two at W. Sussex, Warwick, I. of Wight, Yorks E.R., Yorks N.R., Derby Borough, Ipswich, Newport, Norwich, York City and the City of London. Eleven of the 21 hospitals just enumerated serve urban populations and one receives only private patients

The highest death rates are recorded from Cumberland (21·1), Stafford (21·0), Northumberland (19·4), Oxford (16·6), Three Counties (16·0), and Notts County (15·0).

The following table indicates the statistical changes in respect of tuberculosis during the year.

Number of patients under treatment, 1931.

—					M.	F.	Total.
1st January—							
Pulmonary form	...	...	...	...	445	555	1,000
Other forms	...	...	...	...	69	127	196
31st December—							
Pulmonary form	...	...	...	...	432	532	964
Other forms	...	...	...	...	85	132	217

At the end of the year, there were 5 male and 4 female members of the staffs under treatment for tuberculosis of the lungs and one female under treatment for another form.

The Enteric Group.

For the last three years the actual number of cases has maintained an even level ; and this year there is, in contradistinction to dysentery, again a higher incidence of these infections among female patients than among male—the latter contributing 21 cases as against 89 by the women.

In 24 of the 37 hospitals in which cases were reported, they were limited to the female side, but in only 5 hospitals was there a similar limitation to the male side.

There were nine hospitals in which the incidence was limited to one case only and in 31 hospitals the infection did not affect more than 3 patients.

The highest incidence occurred in the Cornwall Mental Hospital, where there were 16 cases, the distribution of which had the character of a contact spread. There were 8 cases at Prestwich in the female section of the Annex Hospital where former cases are segregated. In these hospitals and in several others, a thorough search, clinical and bacteriological, is conducted for personal carriers of infection.

The disease, in the form of typhoid fever, proved fatal in the cases of 2 males and 11 females, while 4 males and 3 females died from paratyphoid fever, a total of 6 males and 14 females, with a case mortality of 18 per cent.

Dysentery.

The following table shows the incidence over the last ten years of dysentery ; also of a condition which was considered, but without bacteriological confirmation, to be allied thereto, and was classified as "severe diarrhoea."

Year.	Dysentery.			Severe Diarrhoea.
	Fresh cases.	Incidence rate per 1,000.	Death rate per 1,000.	Fresh cases.
1922	858	8.7	1.6	386
1923	458	4.5	0.9	248
1924	362	3.5	0.9	223
1925	253	2.4	0.6	277
1926	515	4.7	0.9	276
1927	307	2.8	0.4	184
1928	403	3.5	0.6	201
1929	372	3.2	0.3	193
1930	254	2.2	0.2	189
1931	423	3.5	0.4	269

These complaints, unlike enteric fever, have both been evenly distributed between patients of each sex throughout this decade.

It is observed that the progressive diminution in the few years prior to 1931 has sustained a set-back in both complaints ; these rises are accounted for by the incidence in three hospitals.

From 60 hospitals no cases were reported, and in 16 others there were fewer than 4 cases each. Sixteen hospitals without dysentery report from one to ten cases of diarrhoea.

The highest number of cases of each condition was reported from Prestwich, 60 of dysentery and 80 severe diarrhoea ; but, in view of the large total population of the hospital (2,770 patients), the incidence of dysentery (21·6 per 1,000), was considerably below the highest incidence, which was at Leicester City (989 patients) where, with 43 cases, it was 43·5 per 1,000.

Other hospitals with a high incidence rate were Denbigh (1,212 patients), 38·0 ; Cheddleton (1,201 patients), 29·2 ; Monmouth (1,217 patients), 22·2 ; and Yorks N.R. (919 patients), 20·7.

Apart from the outbreak at Leicester, there were only 20 cases in 7 of the Borough mental hospitals ; the other 16 Borough hospitals had no cases.

The Prestwich outbreak occurred in the autumn. Several water analyses indicated pollution, and tests of the disinfecting plant revealed defects in the process which were soon remedied. The systematic co-operation of the laboratory materially assisted in the analysis of the water, in the discovery of carriers of intestinal infection and in the determination of the fitness of the affected patients to return to their wards.

At the Leicester City Mental Hospital an outbreak commenced on the female side late in 1930 and it continued into 1931. A similar infection occurred later on the male side. The detection of carriers of infection was very prompt, but the means adopted in segregating them and the affected patients were not so successful. At Denbigh, the cases were distributed in onset over a longer period. At a visit by one of the Commissioners, certain improvements were found to be necessary in the means for disinfection. Here also a laboratory, newly equipped, contributed to discovering the mode of infection.

Case Mortality.—This, while averaging 12·5 per cent., has varied much ; for instance, no deaths from dysentery occurred at Leicester and only two at Denbigh.

Importance of certain Hygienic Precautions.—A study of the conditions associated with outbreaks of intestinal infections leads us to regard with increasing importance the practice of certain hygienic precautions.

Of first importance is the early detection of intestinal disturbance and the prompt discovery of its nature, measures which call for the keen observation and close co-operation of a well trained nursing staff, good clinical experience, and the immediate support of the laboratory.

The efficiency of the process of disinfection, whether of hands, clothing or fittings, requires to be beyond doubt. The utility of any germicide depends on both its proper strength and the duration of its action, factors which are frequently disregarded.

From time to time a process or an apparatus, whose efficacy had not previously been doubted, has been found seriously at fault ; for example, uncovered tanks which have been supposed to attain an effective degree of heat for purposes of disinfection, have, on occasion, been found not to reach the necessary temperature.

The bacteriological determination of the freedom from intestinal infection of patients who have had these complaints, whether before or after admission, is a matter of necessity, and, where infection is known to persist, there can be no question of the demand for the protection of other patients by methods of proved efficiency. The method of distributing bread sometimes calls for amendment.

Whatever the source of the water supply, it has been found essential to verify its soundness at regular intervals by analysis, particularly where it is derived from the same area as that on which the sewage is disposed.

Erysipelas.

While the number of cases, 235, is 15 short of the number in 1929, it is higher than in other recent years.

Seventy-two males and 163 females were affected ; 21 of the latter died, but only one of the males succumbed.

The disease arose in 57 hospitals ; the highest number of cases occurring at Hanwell, 18. There were 11 cases at Storthes Hall, where 35 patients had been affected during the previous 6 years, and there were 10 cases at the Three Counties, with 30 in the same previous period.

Influenza.

Notifications of this disease numbered 3,662, seven times the figure for 1930.

—	M.	F.	Total.
January to March	1,208	1,889	3,097
The whole year	1,551	2,111	3,662
<i>Deaths</i> (whole year)	26	87	113

The suspected relationship of these numbers to the autumn incidence of tuberculosis of the lungs has already been mentioned.

Pneumonia.

Non-tuberculous inflammatory diseases of the lungs and bronchi accounted for the deaths of 1,252 patients (509 males and 743 females), of whom 724 were over the age of 55.

This group constitutes 14·6 per cent. of the deaths from all causes.

Peripheral Neuritis.

At Carmarthen Mental Hospital following an outbreak of this nature detected in November 1930, cases continued to present themselves at intervals until the following February. Some two dozen patients in all showed, some more some less, the signs of this affection. They all had lived in wards supplied from the central kitchen and from the water tanks of the main building.

An investigation of the nature and origin of the neuritis was carried out with the assistance of Dr. Calvert and Dr. Sturdee of the Ministry of Health, and the Government Chemists.

The character of the neuritis was consistent with that produced by lead poisoning. No exceptional quantity of lead was discovered in the later samples of cold water. But from the earlier analyses there were indications that the lead content had been variable, and that even after copper pipes had been substituted for lead, the hot water would in time injuriously affect susceptible persons. It is possible that some of the deposit, seen in sections of the old lead pipes removed in 1930, had become dislodged at some time and had found its way, in uneven quantities, into the food or drink of certain patients.

REGISTERED HOSPITALS.

(*Thirteen in number.*)

Use of Voluntary and Temporary Treatment.

For many years, at any rate ever since 1863, voluntary in-patient treatment has been practised in the Registered Hospitals. In three particulars—in that the “voluntary boarder” might apply for admission either orally or in writing, that no previous *ad hoc* consent from either a Commissioner or a visiting Justice was necessary, and that no limit to the duration of residence upon this footing was included in the terms arranged at the time of admission—the procedure differed, rather by custom than by statute, from that laid down for the admission of similar cases to Licensed Houses. Its simplicity and freedom from formality no doubt enhanced its popularity and usefulness. In the success which attended its use, and in the fact that Commissioners and others were able to comment so favourably upon its practice and to point, in cases of a relapsing nature, to the willingness of the patient to apply again and again for treatment, these hospitals rendered a signal service in teaching to all concerned on the one hand, the merits and high value of voluntary treatment and, on the other hand, the important fact that, for a considerable number of cases, certification and compulsory treatment—that is, under Order—is unnecessary and in many cases harmful. It is unquestionable that the knowledge of, and ability to cite, the experience of voluntary treatment as practised in Registered Hospitals and in Licensed Houses was of powerful service in

securing the passage of the Mental Treatment Act, and thereby the extension of this procedure to public mental hospitals and to other places where it may be desired to treat persons suffering from mental illness.

By way of illustrating the growth of voluntary in-patient treatment at Registered Hospitals, it may be pointed out that in 1891, of the total number of direct admissions to these institutions, 18 per cent. were voluntary cases, that in 1911 this proportion had risen to 24 per cent., and that for the year now under review it was no less than 65 per cent. Indeed, at five of these hospitals percentages ranging from 70 to 75 were reached—The Retreat, 70 ; Cheadle Royal, The Lawn and Bethel, each with 71 ; and Royal Bethlem, 75 per cent. It is worth while emphasizing such numerical statements and keeping them in mind : they help to refute the mischievous doctrine, held and preached in some quarters, that a mental hospital should be looked upon as the last resort and that every effort should be made to keep mentally ill persons away as long as possible from such centres of treatment.

Temporary treatment without certification is a procedure which is, of course, no less new to these hospitals than it is elsewhere. It can be stated, however, that with two exceptions—and these two were among those in which the voluntary admissions reached over 70 per cent.—temporary treatment under section 5 of the Mental Treatment Act was employed at all the Registered Hospitals in extents ranging from 3 per cent. of all their direct admissions to 12 per cent. at The Warneford (Oxford).

Patients resident on 1st January, 1932.

Status.					Males.	Females.	Total.
Voluntary	...	...	...	...	205	258	463
Temporary	...	...	...	...	5	26	31
Certified	...	...	...	...	757	1,186	1,943
Total	...	...	...	...	967	1,470	2,437

A year previously the patients in these hospitals numbered 2,380 (males 955, females 1,425), so that during the year they increased by 57 (males 12, females 45).

Direct admissions to these hospitals numbered 940 (males 395, females 545). Of the total number 65 per cent., as already stated, were voluntary patients ; 6 per cent. were temporary and 29 per cent. were certified.

Departures and Discharges.—The percentage of total discharges (recovered, relieved and not improved) to the admissions during 1931 was 71·9 and of recoveries alone 38·1 (males 39·0, females 37·4).

Deaths in these hospitals numbered 186, and the death rate to the daily average number of all patients resident was 7·8 (males 9·4, females 7·0).

Assault by patient on Medical Superintendent.—Last June a Service patient at The Coppice, Nottingham, seized an axe from some workmen who were erecting a fence in the garden and made an attack on Dr. Hunter, causing a severe head injury which necessitated an immediate operation. As a result of this attack Dr Hunter was seriously ill for many months, but we are glad to know that there is every prospect of his restoration to complete health and vigour. It was considered desirable to effect the removal of the patient responsible for the attack to another institution.

These hospitals continue to be well administered and to afford to private patients of all classes skilled medical treatment with kind and efficient nursing care in suitable and well ordered surroundings. A list of them will be found in Appendix B. in Part II.

NAVAL AND MILITARY HOSPITALS.

Royal Naval Hospital, Great Yarmouth.—The Commissioners who visited this hospital in October 1931 reported that they found the patients generally quiet and orderly and, so far as their mental condition permitted, contented and happy, and that the hospital throughout was in excellent order.

The number of patients on the books was 218—including 37 officers—an increase of 100 on the figures of the previous report. This increase is due in great measure to the patients recently transferred from the Ministry of Pensions Hospital, Kirkburton, under the provisions of the Yarmouth Naval Hospital Act, 1931, but as yet no voluntary patients had been admitted.

There had been no case of epidemic or zymotic disease since the last visit and no patient was suffering from tuberculosis.

All the wards with two exceptions are administered on the open-door principle, considerable attention is being given to occupational therapy and two industrial trainers have been added to the staff. Extensive alterations and improvements have been carried out and central heating is being installed for practically the whole of the premises.

The Commissioners were well pleased with the condition of the hospital and the general care and treatment of the patients.

Royal Military Hospital, Netley.—The Commissioner who visited the mental wards of this hospital on 29th December, 1931, reported that the 2 officers and 47 other ranks whom he found in

residence were in receipt of all proper care, attention and skilled medical treatment in comfortable surroundings, and that excellent provision was made for out-door recreation, occupation and indoor games.

The general health had been good during the period under review and there had been no occurrence of disease of an epidemic character.

Two courses of instruction for probationer mental orderlies had been held during the year, and several alterations and improvements had been effected in connection with this branch of the hospital.

STATE CRIMINAL ASYLUM, BROADMOOR.

This institution was visited in November 1931 by two of the Commissioners, who were well satisfied with the prevailing conditions, including the arrangements for the amusement of the patients, but suggested that, as on the female side, plants and flowers should be supplied to the better male wards.

The general health of the inmates during the period under review was good, and those whom they found under treatment in the infirmary wards appeared to be receiving excellent care and attention.

A new Roman Catholic Chapel was noted amongst the additions since the last visit.

The number of patients resident was 822, of whom 618 were men and 204 women.

LICENSED HOUSES.

(Fifty-four in number.)

Use of Voluntary and Temporary Treatment.

Statutory authority for the admission of voluntary cases to these establishments was given by section 6 of the Act of 1853. It was, indeed, this provision which served as precedent for their admission some ten years later to Registered Hospitals (see p. 13 of the 17th Annual Report of the Commissioners in Lunacy). Although voluntary treatment at Licensed Houses is therefore no novelty, it is in comparatively recent years that its extension has been rapid : thus in 1891, of the total number of direct admissions to these establishments, 4 per cent. were voluntary cases, 14 per cent. in 1911, and 49 per cent. in 1931. It appears that at present voluntary treatment is practised rather more extensively in the provincial than in the metropolitan group of these houses—the percentage of voluntary cases admitted during the year under review to the former being 53 as compared with 46 for the latter. While these proportions are somewhat less than those we have mentioned as obtaining for Registered Hospitals, it is clear that

substantial use of voluntary treatment has been made by the Licensed Houses.

Temporary treatment without certification cannot be practised in Licensed Houses without the previous approval of the establishment for this purpose by our Board. Not all these institutions applied for approval. It was given, subject in some cases to certain limitations, to 17 metropolitan and 28 provincial houses. Of the total direct admissions to these institutions, 9 per cent. were temporary patients, 10 being the percentage for the metropolitan and 8 for the provincial houses. It should be noted, however, that, in the cases of nine of the former and nineteen of the latter, no temporary patient was received throughout the year: if these 28 instances in which the procedure was not employed are excluded from the calculation, the proportion of temporary patients among the admissions to the 26 houses in which use was made of the procedure is found to be 12 per cent.

On the 1st January, 1932, there were 19 Metropolitan Houses licensed by us and 35 Provincial Houses licensed by Justices for the reception of patients under the Lunacy and Mental Treatment Acts, the same number as a year previously.

Patients resident on 1st January, 1932.

—				Males.	Females.	Total.
Metropolitan Houses :						
Voluntary	...	...	...	57	100	157
Temporary	...	...	...	6	15	21
Certified	...	...	...	358	647	1,005
Provincial Houses :						
Voluntary	...	...	...	73	146	219
Temporary	...	...	...	8	11	19
Certified	...	...	...	656	907	1,563
Total	...	...	...	1,158	1,826	2,984

The total number of patients resident in these houses showed an increase of 49 during the year, i.e., an increase of 79 males and a decrease of 30 females. The increase in the number of males was due to the transfer to the Old Manor of 114 Service patients on the closing of the Ministry of Pensions Wing at the Storthes Hall Mental Hospital.

Direct admissions to these houses numbered 1,215 (males 446, females 769). Of the total number, 49 per cent. were voluntary patients, 9 per cent. were temporary and 42 per cent. were certified.

The percentage of total departures and discharges (recovered,

relieved and not improved) to the admissions was 67·9, and of recoveries alone 23·2 (males 22·2, females 23·8).

The deaths numbered 323, and the death-rate per cent. of the daily average of all patients resident was 11·0 (males 10·8, females 11·8).

Our inspection of these houses during the past year enables us to say that they are so administered as to afford due care and supervision of those in residence.

Variations in Licences.—The changes that have taken place in the licences are included in the revised list of these houses which, with their present licensees, may be found in Appendix B. in Part II. Among them may be mentioned :—

Featherstone Hall.—The licence was transferred from Dr. A. N. and Mrs. M. F. Leatham to W. L. Bailey, Esq., Barrister-at-Law, the son of a former licensee of this house, and Mrs. L. M. Robinson. The licence was subsequently transferred from Featherstone Hall, Southall, to other premises known as Featherstone Lodge, Forest Hill.

The Priory.—The name of Dr. B. W. Brown (M.B.Lond., D.P.M.) was added to the licence as resident licensee in place of Dr. James Chambers, who ceased to be resident.

Stretton House.—We learned with regret of the death of Lieut.-Col. A. A. Watson, C.M.G., D.S.O., L.R.C.P., who had been one of the licensees of this house since 1908.

SINGLE-CARE.

The following table shows the number of patients who were resident in private single-care under the provisions of the Lunacy and Mental Treatment Acts, but exclusive of cases found of unsound mind by inquisition.

Patients resident on 1st January, 1932.

Status.					Males.	Females.	Total.
Voluntary	...	...	...	...	—	2	2
Temporary	...	...	...	...	—	—	—
Certified	...	...	...	...	86	252	338
Total	...	...	...	...	86	254	340

This total is practically identical with that of a year ago, and we are able to report, as a result of our visits to these patients—to some of whom a second visit has been paid—that the arrangements for their care and treatment were generally satisfactory.

CERTIFIED PATIENTS IN PUBLIC ASSISTANCE INSTITUTIONS*

The number of patients certified under the Lunacy Acts and detained in Public Assistance Institutions on 1st January, 1932, was 14,530 (males 6,328, females 8,202).

It should be noted that these figures relate only to persons certified under the Lunacy Acts, and that they by no means represent the total number of mental cases in these institutions.

In spite of the need for additional accommodation in County and Borough Mental Hospitals only two Visiting Committees have during the period under review availed themselves of the facilities afforded by section 26 of the Lunacy Act, 1890, for providing accommodation in Public Assistance Institutions for selected patients.

Such arrangements have been completed as follows :—

- (1) By the Committee of the Nottingham City Mental Hospital for the reception of 40 female patients in the Bagthorpe Institution, Nottingham.
- (2) By the Committee of the Warwick County Mental Hospital for the reception of 15 patients of each sex in the Alcester Public Assistance Institution.

THE USE OF SEDATIVES.

As noted last year, the returns as to the use of sedatives have shown that wide variations in practice exist as between individual hospitals. Further, in relation to the average annual employment of sedatives per 100 patients there is a considerable difference as between the three principal groups of institutions—i.e., County and County Borough Hospitals, Registered Hospitals and Licensed Houses.

The use of sedatives presents problems of some complexity. The Board recognize the many considerations which may determine the choice of one or other of several alternative methods of treatment. There may possibly be differences between the kinds of cases receiving treatment in different classes of institution. These and other factors seemed to us to merit further examination and we are now engaged in following up the valuable indications afforded by analysis of the statistics, by making personal enquiries at representative hospitals of each group.

OUT-PATIENT TREATMENT.

The developments in regard to out-patient treatment have played so important a part in the year under survey that we include in our observations on Mental Disorders a review of certain aspects of this form of treatment.

* The number of mental defectives in these institutions will be found on p. 97.

In our 9th* and 12th† Annual Reports, reference was made to the subject. In tracing its history and development, we alluded to its dual mode of origin rather more than 40 years ago—(a) at a mental hospital (Wakefield), and (b) as a section in the out-patient department of a voluntary general hospital (St. Thomas's, London), at the instigation respectively of the late Professor Bevan-Lewis and Dr. Henry Rayner. In pointing to the extension of the former system to other West Riding Mental Hospitals, to its successful maintenance and development by Professor Shaw Bolton at Wakefield and by Dr. Gilmour at Scalebor Park, and to the views of both these Superintendents as to its high value as thus developed, we indicated our opinion that, great as is the good that can be and has been accomplished by this method of development, the most fruitful line upon which to organize the out-patient treatment of mental illness would prove to be the second of those two methods of development, especially upon the lines instituted in 1918 mainly at the instigation of Dr. Good, at the Radcliffe Infirmary (Oxford).

In this Report, we propose only to indicate the progress which, since we last stated the position, has been made in the provision of these facilities as a joint arrangement between a County or Borough mental hospital and one or more general hospitals.

At the end of 1925, omitting arrangements made in connection with London hospitals, there were some twelve voluntary general hospitals, in the out-patient department of which a section for the treatment of mental cases had been established, and in which part or the whole of this treatment was carried out by the medical staff of a County or Borough mental hospital.‡ In one instance, the staff of the mental hospital was connected with this work in two general hospitals. By the end of 1930, while one or two of these arrangements had ceased, the total number of voluntary general hospitals thus linked to public mental hospitals had grown to 25. To this number, in the course of the first year's operation of the Mental Treatment Act, as many as 35 more were added; so that, at the close of 1931, the number of hospitals thus linked was 61, and the number of public mental hospitals with which these arrangements had been made was 49—the difference between the two numbers being explained by the fact that eleven mental hospitals had two, three or four general hospitals associated with them. A few more similar Centres were either in negotiation or in the course of being opened. We regard this as a highly satisfactory statement to make: so much progress in the course of a single year, particularly in a year beset with so many financial difficulties, is most encouraging and augurs well for the ultimate development of the new Act.§

* 1922. See pp. 32–34. † 1925. See pp. 50–56.

‡ See pp. 54 and 55 of the 12th Annual Report of the Board of Control.

§ See Supplement (Part II of this Report) for four communications (from Leicester City, Derby Borough, Wadsley and Wakefield Mental Hospitals) which are of interest in relation to Out-patient treatment.

We still feel, and in the light of experience gained during the past five years our feeling is strengthened, that the most profitable place in which to arrange for this line of treatment is within the out-patient department of a general hospital. We would go further, and would suggest, as not an unfair criticism or challenge, the view that no hospital can maintain a claim to be truly general which wholly excludes from its sphere of activity, either in its wards or in its out-patient department, the treatment of mental illness. Hence we urge that every such out-patient department should possess its section for nervous and mental cases ; and further that a share of the work of this out-patient treatment should be conducted by the medical staff of the mental hospital to whose care a proportion of the patients will in all probability eventually go. We are convinced that the Visiting Committees, besides rendering valuable service to the mental health of their immediate community, would be acting wisely were they always to ensure that their medical staff are adequately experienced and numerically sufficient to be available for their appropriate share of this out-patient work.

By whom this Out-patient Treatment should be conducted.—From the remarks just made, it must not be inferred that we at all have in mind that this treatment should pass either now or ultimately entirely into the hands of the medical staff of public mental hospitals. No one section of the profession has any claim to monopolize the work. Indeed, the proportion of members of the profession who can undertake it is strictly limited. In the first place, not everyone is temperamentally suited to undertake the work. Granted suitability, which includes full faith in the value of the treatment and an adequate measure of self-confidence, the work, because of its difficulty, requires sufficient training and experience to ensure requisite skill and a high standard of competency. Therefore, just as in hospitals for mental cases the treatment of recently admitted patients is reserved for the more senior members of the medical staff, so this psychotherapeutic work ought not to be entrusted either to junior Medical Officers or to physicians merely on the score that they possess a flair for it. If really competent persons cannot be found to undertake it, it were better to abstain from offering this form of treatment. Secondly, the work is arduous : it indeed can be exhausting ; and it is doubtful if, at one session, a physician can attend to more than four or five cases. Therefore, if the out-patient section for nervous and mental cases is to fulfil all the functions which we believe it can serve, prudence will suggest the desirability of utilizing the services, if available, of every physician competent to undertake the work. There are a few areas where it is possible to find, within easy access of a general hospital's out-patient department, private practitioners with special knowledge of psychological medicine, a Public Mental Hospital, a Registered Hospital, a Licensed House, and even an Institution for mental defectives. Under such fortunate circum-

stances and if the right desire for co-ordination prevails, it should be easy to maintain a strong team of workers for this highly important line of treatment. There are other places in which at present, and perhaps for many years to come, the medical staff of the public mental hospital will be found to be the only persons available. We also suggest that when, under section 6 (3) (a) of the Mental Treatment Act, such a Centre (or Clinic) for the treatment of nervous and mental cases is set up in the out-patient department of a voluntary general hospital, it will prove the more acceptable arrangement if the latter's governing Authority effect its establishment and if, in order to mark their sense of the importance of the subject, they appoint an Honorary Physician in charge of the Centre, instead of merely granting permission for the work to be conducted in their out-patient department.

Functions which Centres for Out-patient Treatment should perform.—To these Centres will come : (i) neurological and psycho-neurotic cases ; (ii) cases of mental disorder, some of them no doubt of long standing but, especially as family doctors get to appreciate the value of both the advice and treatment available at these Centres, most of them in incipient and early stages of the illness ; (iii) patients absent on trial from mental hospitals ; (iv) persons who, having had a previous attack of mental illness, have been taught to recognize the symptoms of possible relapse and the value of timely advice ; (v) mental defectives, doubtless mostly for examination and advice, but in some instances suitable for the application of remedial measures ; (vi) cases of mental retardation ; (vii) cases in which " Child Guidance " work is called for ; and (viii) cases of delinquency or others in which the Courts may desire expert medical advice. This does not claim to be an exhaustive enumeration ; but it is sufficient to explain why we attach so much importance to these Centres, and the persistence of our efforts to see them established. We desire to see the work of the mental hospital linked up with that of the general hospital for several reasons. In the first place, the nature of the cases likely to present themselves points to the need for this association ; secondly, some of the patients will need in-patient treatment at the mental hospital, and thirdly, others will have previously been patients there.

IMPORTANCE OF MODERN PSYCHOTHERAPEUTIC METHODS.

There is a tendency in some quarters to suggest that there is no essential difference between modern psychotherapeutic methods and time-honoured practice in the treatment of mental disorders, or alternatively to argue that in so far as there is a difference the modern methods are of no service in the case of patients in mental hospitals. We believe that neither of these views is correct. The former overlooks the technical skill and the training which modern analytic and re-educative methods of treatment,

such as we have in mind, imply. The latter fails to recognize two considerations in regard to mental hospitals: in the first place, more frequent and longer "heart to heart" talks between patient and doctor would disclose patients already in the mental hospital who would benefit by these modern methods of treatment; and secondly, under the Mental Treatment Act, many cases (psychoneuroses and disorders commonly classed under the heading of "nerves") which admittedly derive signal benefit from these modern methods, are likely in future to be admitted to mental hospitals as voluntary patients. It is in order to ensure adequate opportunity for these talks and for the practice of the methods to which we are alluding that we so strongly advocate the provision of a clinical room in every ward.*

The divergent views to which we have referred, produce a tendency to some cleavage of practice: so that, as it seems to us, the treatment of psychoneurotic and so-called "nerve" cases is apt to be in the hands of physicians without experience in the treatment of the psychoses and the opportunity of mental hospital physicians to see and to treat these cases of "nerves" has been seriously restricted. The necessity to regard Psychological Medicine as a specialty is admitted, but until it is accepted that it is not practicable to acquire an all-round competency in its sub-branches—fortunately not yet the case—any exclusive specialism within it is strongly to be deprecated. The association of mental hospital physicians with the treatment of these conditions at out-patient Centres will help to attract to the mental hospital service, and to retain in it, Medical Officers who have taken pains to learn modern psychotherapeutic methods. Anything which will help to produce, either in the mental hospital or out of it, the physician who is familiar with the cause and treatment not only of advanced mental disorders but of those conditions familiarly referred to as "nerves" will be not only to the good of the patients themselves, but to the advancement of Medicine.

* See 11th Report, p. 20, and 12th Report, p. 14.

II. MENTAL DEFICIENCY.

1. ACCOMMODATION.

In our last Annual Report comment was made upon the marked awakening of Local Authorities to the wisdom and necessity of carrying out their duties under the Mental Deficiency Act. In discussing the accommodation already provided it was pointed out that, if the schemes recently submitted materialized, in about five years' time some 10,000 extra beds would have been provided and further that, if this rate of progress were maintained, it should be possible to meet the demand for the most urgent of the young, trainable and employable cases in about 15 to 20 years' time. This year it is not possible to be so hopeful about the fulfilment of these needs. That Local Authorities have continued during the year under review to realize the need for further colony provision is shown by the figures that follow ; but the financial position of the country now necessitates a slowing down process in the mental deficiency service as in other health services. Consequent delay in providing the beds so urgently needed must result, carrying with it inevitable harm and suffering. The disappointment of this check, coming at a moment of real progress, has to be faced. It cannot, however, be too strongly emphasized that the decision of the Minister of Health took the form of an instruction to slow down and not to stand still. Plans for the completion of colony schemes therefore should proceed, but at a slower rate. Local Authorities should continue to make provision little by little as circumstances allow, bearing the final needs of their area constantly in view.

The urgent need for beds in institutions is shown by the 2,852 cases who are reported in this year's annual returns to be awaiting removal to an institution and for whom no accommodation can be found. This number can only be a small part of those who need such provision, as very few Local Authorities have as yet completed their ascertainment.

Forty-four estates have now been acquired by 66 Local Authorities for the purpose of developing colonies. These colonies should ultimately serve the needs of 77 authorities, of which 11 will enter into contract with the providing authority or joint board of authorities. Five other authorities who have formed a joint board will probably have completed the purchase of an estate and mansion before this Report is published.

Nine authorities have agreements or are negotiating agreements with institutions founded by philanthropic efforts, namely, Royal Western Counties Institution, Royal Eastern Counties Institution and Stoke Park.

Two authorities have helped to provide a colony and two are considering making a contract with a colony under the management of Public Assistance Authorities.

Ten authorities are contemplating making use of Public Assistance accommodation in their areas under section 36 or 37 of the Mental Deficiency Act.

The four new estates acquired by Local Authorities during the year are :—

Hull C. B.	—	—	—	—	—	Winestead Hall
Nottingham C.	—	—	—	—	—	Balderton Hall
Buckingham C., Oxford C., Oxford C.B., and Reading C.B.—	—	—	—	—	—	Borough Court
Brighton C.B.	—	—	—	—	—	Laughton Lodge

In addition Monyhull Colony has been transferred from the Public Assistance Authority to the Birmingham mental deficiency service.

From the above it will be seen that 105 authorities, of which 49 are County Councils and 56 County Boroughs, have taken some active steps or have under serious consideration schemes for fulfilling their statutory obligation to make residential provision for the defectives in their area.

Nineteen authorities remain, however, who appear to have done little or nothing beyond using beds in Public Assistance Institutions. Many are too small to be able alone to take economic and efficient action, but they have neither combined with neighbouring authorities nor entered into any scheme on a contractual basis for permanent provision for their mentally defective. These authorities are :—

Anglesey C.	Isle of Ely C.
Burton-on-Trent C.B.	Isle of Wight C.
Caernarvon C.	Merioneth C.
Coventry C.B.	Newport C.B.
Dudley C.B.	Salop C.
Eastbourne C.B.	Soke of Peterborough C.
East Sussex C.	West Sussex C.
Hastings C.B.	Worcester C.B.
Hereford C.	Worcester C.
Huntingdon C.	

In addition to the above, Staffordshire has taken no effective steps to make residential provision on the estate already acquired.

Local Authorities have continued during the year to make use of the powers conferred upon them under the Local Government Act, 1929. Six Public Assistance Institutions have now been appropriated by Local Authorities for the exclusive use of the mentally defective. The number of defectives already occupying beds in Public Assistance Institutions before the passing of the Local Government Act is indicated in the next section of the Report, where it is shown that over 10,000 have been ascertained since the passing of the Act who were in receipt of indoor or outdoor relief. It is only partially true, therefore, to say that the appropriation of Public Assistance Institutions has provided more

beds for defectives; but the re-allocation has provided more beds for those under certificate and carries with it many advantages. Better classification, more facilities for training and recreation, greater care and at the same time greater freedom can be given where the institution is avowedly for the mentally defective and not for a mixed population. Ultimately, it is intended that these institutions should serve as an adjunct to the colony and should be used for older, lower grades cases only. The buildings as a rule are such that they cannot be adapted to the needs of the younger boys and girls, whose proper place is in the training centres at the main colony.

The present position with regard to accommodation.

Beds provided by Local Authorities.—The number of beds provided by Local Authorities during the past year is 2,412. Of this total, 1,182 represents new beds and the remaining 1,230 are due to the appropriation of Monyhull Colony, Birmingham, from the Public Assistance to the Mental Deficiency service and the consequent certification of the premises under section 36 of the Act of 1913. The total number of beds provided by Local Authorities is 11,026.

The 53 Local Authorities whose provision made under section 30 (c) of the Act of 1913 is already in use, are as follows :—

	<i>Beds</i>		<i>Beds</i>
Bedfordshire and North-		Halifax C.B.	
amptonshire Joint Board		Craigie Lea Home — —	28
(Bedford C., Northampton		Hampshire Mental Health	
C., and Northampton C.B.)		Institutions Joint Com-	
Bromham House —	12	mittee	
Bradford C.B.		Coldeast Colony — —	120
Ashfield — — —	50	Tatchbury Mount —	56
Westwood — — —	50		
Birmingham C.B.		Ipswich C.B.	
Coleshill Hall — —	300	Handford Home — —	22
Monyhull Colony — —	1,230	Kent	
Bristol C.B.		Leybourne Grange — —	94
Hortham Colony — —	608	Tenterden Institution —	129
Buckingham C.		Kingston-upon-Hull C.B.	
The Manor House, Ayles-		Tilworth Grange — —	83
bury — — —	99	Lancashire Mental Hospitals	
Croydon C.B. — — —		Board	
6, Morland Road — —	20	Calderstones — —	2,686
Cumberland, Westmorland		Leeds C.B.	
and Carlisle Joint Com-		Meanwood Park Colony —	253
mittee		Kepstorn — — —	40
Dovenby Hall Colony —	65	Leicester C.B.	
Denbigh C.		Leicester Frith — —	277
Coed Du Hall — —	62	London C.	
Derby C.B.		The Manor — — —	1,271
Thornhill — — —	39	Brunswick House — —	75
Devon C.		South Side Home — —	80
Stoke Lyne — — —	57	Farmfield — — —	133
Glamorgan C. — — —			
Drymma Hall — —	79		
Hensol Castle — —	100		

	<i>Beds</i>		<i>Beds</i>
Middlesex C.		Somerset C.	
Bramley House - -	50	Sandhill Park with ancil-	
Middlesex Colony, Shenley	320	lary premises, Cambridge	
Craufurd Home - -	116	House, Long Ashton ;	
Mid-Yorks Joint Board		West End House, Shep-	
(Leeds, York, Halifax and		ton Mallet ; and Yatton	
Kingston-upon-Hull C.B.s)		Hall - - - -	424
Mid-Yorks Certified		South West Yorkshire Joint	
Institution - -	214	Board (Barnsley, Dews-	
Newcastle-upon-Tyne C.B. -		bury, Doncaster, Halifax,	
Shotley Bridge Colony -	400	Huddersfield, Rotherham	
Norfolk C.		and Wakefield C.B.s	
Little Plumstead Hall -	70	St. Catherine's - -	20
Norwich C.B.		Stoke-on-Trent C.B.	
Eaton Grange - -	37	Stallington Hall - -	77
North-Eastern C.B.s Joint		Warwick C.	
Board (Darlington, Middles-		Weston Colony - -	58
brough, South Shields,		Wilts C.	
Sunderland, Tynemouth		Pewsey Institution -	12
and West Hartlepool C.B.s)		York (West Riding C.)	
Prudhoe Hall Colony -	430	Rawcliffe Hall - -	121
Nottingham C.B.		The Mansion, Kirkburton	60
Aston Hall - - -	108	Oulton Hall - - -	164
Sheffield C.B.		West Wales Joint Board	
Hollow Meadows - -	58	(Cardigan, Carmarthen,	
Wales Court - - -	50	Pembroke, Brecon and	
Cliffe House - - -	29	Radnor C.s)	
		Pantglas Hall - -	90

The newly provided accommodation during the past year comprises Hortham Colony (Bristol C.B.), the mansions at Dovenby Hall (Cumberland, Westmorland and Carlisle Joint Committee), Tatchbury Mount (Hampshire Mental Health Joint Institutions Committee) and St. Catherine's (South-West Yorkshire Joint Board), the remainder of the first section of the Middlesex Colony, Shenley (Middlesex C.), an additional Villa at Coldeast Colony (Hampshire Mental Health Institutions Joint Committee), the transferred Public Assistance premises, Craigie Lea Home (Halifax C.B.) and ancillary premises, as well as a new Villa, at Sandhill Park (Somerset C.).

Bristol C.B. has made provision at Hortham Colony for the accommodation, care, training, employment and recreation of 608 patients of both sexes and all grades of mental defect. This is the first colony to have been erected all at one time by a Local Authority, and its future will be watched with much interest.

Statutory approval has been given to the plans and contracts of the following schemes, and the buildings are in course of erection :—

	<i>Beds</i>
Cell Barnes Colony (Hertford C.) - - - -	600
Dovenby Hall Colony (Cumberland, Westmorland	
and Carlisle Joint Committee) - - - -	120
St. Catherine's (South West Yorkshire Joint Board) -	120
Meanwood Park Colony (Leeds C.B.) - - - -	320
Westwood (Bradford C.B.) - - - -	240
South Ockendon Colony (West Ham C.B.) - -	140

	<i>Beds</i>
Coldeast Colony (Hampshire Mental Health Institutions Joint Committee) — — — — —	300
Cranage Hall (Cheshire Joint Board) — — — — —	60
Leicester Frith (Leicester C.B.) — — — — —	60
Botley's Park (Surrey C.) — — — — —	97
Hensol Castle (Glamorgan C.) — — — — —	320
Little Plumstead Hall (Norfolk C.) — — — — —	220

Progress is being made with the plans of the following schemes, some of which will have received statutory approval prior to the publication of this Report :—

	<i>Beds</i>
Leybourne Grange (Kent C.) — — — — —	300
Brockhall (Lancashire Mental Hospitals Board) — — — — —	300
Laughton Lodge (Brighton C.B.) — — — — —	35
Balderton Hall (Nottingham C.) — — — — —	70
Stretton Hall (Leicester C.) — — — — —	50
West View, Tenterden (Kent C.) — — — — —	50
Brandesburton Hall (East Riding and York Joint Board) — — — — —	120
Harmston Hall (Lincolnshire Joint Board) — — — — —	140
Prudhoe Hall Colony (North-Eastern County Boroughs Joint Board) — — — — —	200
Caistor Institution (Parts of Lindsey, Lincolnshire) — — — — —	118
Loddon and Clavering (Hedderley) Institution (Norfolk C.) — — — — —	170
Godstone Institution (Surrey C.) — — — — —	100
Murray House, Chertsey (Surrey C.) — — — — —	200
Weston Colony (Warwick C.) — — — — —	50

Other Local Authorities which have initial or further institutional provision under consideration are :—

Durham C.	Wilts C.
Cheshire Joint Board.	Portsmouth C.B.
South West Yorkshire Joint Board	Salop C.
Beds and Northants Joint Board	West Wales Joint Board.
Flint C. (Hawarden Institution)	

The following estates (other than those previously mentioned) have been acquired by Local Authorities for colony development :—

- Site near Stafford (Stafford C.).
- Hutton Hall, Shenfield (London C.).

Section 29 of the Mental Deficiency Act, 1913.—Up to the present date orders constituting Boards for the provision of accommodation jointly have been made as follows :—

Joint Committees :

1. East and West Suffolk Joint Committee.
2. Gloucestershire Joint Committee for the Mentally Defective (Gloucester C. and Gloucester C.B.).
3. Cumberland, Westmorland and Carlisle Joint Committee.

Joint Boards :

1. Mid-Yorkshire Joint Board (Halifax, Kingston-upon-Hull, Leeds and York C.B.s).
2. Cheshire Joint Board (Chester C. and Chester, Birkenhead and Wallasey C.B.s).
3. Lincolnshire Joint Board (The Parts of Holland, Kesteven and Lindsey C.s, and Grimsby and Lincoln C.B.s).

4. South-West Yorkshire Joint Board (Dewsbury, Doncaster, Halifax, Huddersfield, Rotherham and Wakefield C.B.s).

5. West Wales Joint Board (Cardigan, Carmarthen, Pembroke, Brecon and Radnor C.s).

6. North-Eastern County Boroughs Joint Board (Darlington, Middlesbrough, South Shields, Sunderland, Tynemouth and West Hartlepool C.B.s).

7. Bedfordshire and Northamptonshire Joint Board (Bedford and Northampton C.s and Northampton C.B.).

8. East Riding and York Joint Board (East Riding of Yorkshire and York C.B.)

Other beds provided.—The following accommodation was available on the 1st January last, in addition to that provided by Local Authorities in certified institutions under section 36 :—

In Certified Institutions	...	...	...	...	...	8,594
In Certified Houses	...	...	...	...	...	280
In Approved Homes	...	...	...	...	...	655
In Public Assistance Institutions approved under section 37 of the Mental Deficiency Act (including Darenth Training Colony, the Caterham, Fountain and Leavesden Mental Hospitals, Great Barr Colony and Seafeld House) ...						
						9,027

Proportion of Cases in Institutions.

The Wood Report indicated that the proportion of cases requiring institutional treatment in any area amounted approximately to 2 per 1,000. No Local Authority has yet provided sufficient beds to meet the needs of its area on this basis.

On 1st January, 1932, in 56 areas the proportion of cases in institutions was 0·50, or more, per 1,000 of the general population :

Birmingham C.B.—	—	1·55	Nottingham C.B.	—	0·71
Somerset C..	.	1·40	Smethwick C.B.	—	0·71
Ipswich C.B.	—	1·34	Reading C.B.	—	0·68
Rutland C.	—	1·21	Cardiff C.B.—	—	0·68
York C.B.	—	1·10	Berkshire C.	—	0·67
Newcastle C.B.	—	1·09	Kingston-upon-Hull C.B.		0·66
London C.	—	1·07	Chester C.B.	—	0·65
Leicester C.B.	—	1·05	York, East Riding C.	—	0·64
Bristol C.B.—	—	1·04	Norfolk C.	—	0·63
Wiltshire C.	—	1·03	Bradford C.B.	—	0·62
Walsall C.B.	—	1·02	Eastbourne C.B.	—	0·61
Bath C.B.	—	1·00	Gateshead C.B.	—	0·60
Exeter C.B.—	—	0·98	Suffolk, East and West	—	0·59
Oxford C.B.	—	0·97	Great Yarmouth C.B.	—	0·58
Devon C.	—	0·93	Halifax C.B.	—	0·58
Plymouth C.B.	—	0·91	Lancaster C.	—	0·56
Buckingham C.	—	0·88	Southampton C.	—	0·56
Leeds C.B.	—	0·83	Wolverhampton C.B.	—	0·56
Dorset C.	—	0·82	Shropshire C.	—	0·55
Cambridge C.	—	0·79	Kent C.	—	0·54
West Bromwich C.B.	—	0·79	Hastings C.B.	—	0·54
Norwich C.B.	—	0·78	Gloucester C. and		
Warwick C.	—	0·78	Gloucester C.B.	—	0·53
Soke of Peterborough C.		0·77	Merioneth C.	—	0·53
Tynemouth C.B.	—	0·77	Doncaster C.B.	—	0·52
Montgomery C.	—	0·76	East Ham C.B.	—	0·51
Canterbury C.B.	—	0·74	Cumberland, Westmor-		
Middlesex C.	—	0·73	land and Carlisle C.B.		0·50
Sheffield C.B.	—	0·72	Worcester C.B.	—	0·50

On the other hand, 16 Local Authorities, as compared with 25 a year ago, had a ratio of only 0·25, or less, per 1,000, in institutional care, of whom the ten lowest were :—

Northampton C.B.	—	0·21	Brighton C.B.	—	—	0·15
Newport C.B.	—	0·21	Swansea C.B.	—	—	0·15
Oxford C.	—	0·20	Merthyr Tydfil C.B.	—	—	0·15
Parts of Kesteven C.	—	0·18	Cardigan C.	—	—	0·13
Parts of Holland C.	—	0·18	Barnsley C.B.	—	—	0·11

Hostels.

A new hostel for men has been opened during the year at Langdon Farm, as a branch of the Royal Western Counties Institution. Those already in existence continue to play an active and important part in the general scheme for the care of the mentally defective. Hostels provide both for the needs of those boys or girls who are able to undertake paid work outside but who are happier and safer living in a hostel, and for those who are able to pass on to some form of community care.

The following institutions function solely as hostels and receive patients in the first instance on licence from other certified institutions :—

Eagle House, Mitcham (Surrey Voluntary Association for Mental Welfare).

Royal Fort Home, Bristol (The Committee of Management).

Royal Hostel, Elstead (Surrey Voluntary Association for Mental Welfare).

The Old Rectory, Bath (Bath Voluntary Association for Mental Welfare).

Boys and girls are also sent out to daily work from the following institutions, some of which have separate hostel branches :—

Royal Eastern Counties Institution, Colchester.

The Manor (London C.)

Royal Western Counties Institution, Exeter.

Warwick Branch of the State Institution.

South Side Home (London C.).

Farmfield (London C.).

Brunswick House (London C.).

Kepstorn (Leeds C.B.).

Approved Homes and Certified Houses.

We have given consideration during recent years to the standard of nursing, training and classification in Approved Homes and Certified Houses.

Most of these homes are run for profit and are used largely by parents who wish their children to be cared for in private surroundings, and not under Order ; others are used as training homes for small groups of defectives under the management of charitable associations. Whilst realizing the important part

they play and the excellence in certain cases of the care provided, we have not always been satisfied that the standards are maintained at the high level now usually demanded in publicly maintained Certified Institutions. Certain difficulties stand in the way of homes under private management which it may be well to set forth.

In the first place, the small groups of patients in such homes are usually beyond one person's capacity to care for and yet the numbers are often too small to make it economically possible to employ trained teachers and nurses. There are difficulties also in the way of obtaining the right type of junior nurse. The more intelligent girls wish to train under a well qualified staff and to sit for a qualifying certificate. Arrangements might sometimes be made with neighbouring institutions for the training of nurses who wish to take the examination; but there is no doubt that the smaller homes are seriously hampered in this respect as well as by the fact that they have no pension scheme. No amount of goodwill on the part of the Superintendent can make up to the children for an inefficient staff.

The financial side also presents difficulties. The maintenance, care and training of a small group of patients is a relatively costly matter, especially in the case of low grade children, and there is a diminishing number of parents who can afford to pay heavy fees. It is our experience that the fees charged are not always large enough to maintain the home in a proper state of efficiency. The limitation in the number of applicants re-acts harmfully also on the classification in small homes. Where there is little choice there is an inevitable tendency to admit patients without regard to their suitability.

For the above reasons we have recently discouraged all persons from opening private homes unless they are in a good financial position and are qualified by personality and experience both to care for mentally defective persons, and to maintain a high standard of nursing and training amongst their staff.

2. ASCERTAINMENT.

The increase in the number of mental defectives discovered by Local Authorities has continued, although at a slightly lower level than last year. The mean figure of defectives known to Local Authorities, as shown by their annual returns, is this year 2.44 per 1,000 of the population of England and Wales. It should be noted that Local Authorities have been requested not to include in these returns mentally defective children between 7 and 16 years of age unless they have been notified by Local Education Authorities under section 2 (2). The following table from the Wood Committee's Report (Table 11 (b) (3)) shows a

probable average all over the country of 4·52 per 1,000, excluding feeble-minded children of school age :—

<i>Per 1,000 of population.</i>			
Adults	...	...	3·79
Children—			
Imbeciles	...	...	0·60
Idiots	...	...	0·13
Total			4·52

As long as the discrepancy between these figures remains so great and as long as eight Authorities still remain who have only reported numbers below 1 per 1,000, it is clear that the Mental Deficiency Act is only partially operative in the country. It is a truism to say that until Local Authorities are aware of the existence of the defectives in their area and have investigated the nature of their defect and of their surroundings they cannot begin to make use of the beneficial provisions of the Act. But we believe that if the disastrous and uneconomic results of retarded action were fully realized Local Authorities would be more willing to take this essential preliminary step. These results are clearly brought home to anyone who cares to look into the history of defectives sent as adults to institutions. Especially amongst those admitted through the courts and amongst the violent and dangerous defectives admitted to the State Institution, case after case is to be seen where early recognition of the defect followed by suitable care and training would have prevented much harm in the community and the consequent need for a costly form of treatment. Early neglect is the surest way of creating anti-social behaviour; and the anti-social defective is a much more difficult and costly person to deal with than the defective who is well trained and who, under proper care and supervision, often becomes partly self-supporting.

As we pointed out last year, Local Authorities are fundamentally dependent upon Local Education Authorities for their knowledge of young defectives, and it is much to be regretted that in the figures that follow so small an increase is shown this year in the number of cases notified by the Local Education Authorities to Local Authorities. This is partly, but we believe not entirely, due to the fact that Local Education Authorities have only the power to notify children who leave Special Schools. Until the law has been amended so as to allow the notification of feeble-minded children leaving ordinary schools at any age, ascertainment is bound to be incomplete and the evils referred to above will continue.

The annual returns furnished by Local Authorities this year show that at the end of 1931 the number reported by Local Authorities was 97,310,* an increase during the year of 11,347.

* This is the total number of cases known to Local Authorities, and is not comparable with the numbers given on p. 90.

The ratio discovered per 1,000 of the population of England and Wales is now 2·44 as compared with a ratio of 2·17 a year ago. The large increase is partly due, as last year, to the provisions of the Local Government Act, 1929, which extended to cases in receipt of Poor Law relief the duty of the Local Authority to ascertain all defectives in their area. The returns show that of the cases known to Local Authorities over 10,000 come under this new provision; 6,719 of them were receiving indoor, and 3,655 outdoor, relief. From the information before us we see that 15 Local Authorities have not yet made any return of Poor Law cases, while others have not yet completed their investigations; so that we must anticipate that the numbers will materially increase during the next few years. Excluding these cases, however, there is an increase on last year's returns of 8,908 cases. That there is a striking difference in the activities of the various Local Authorities will be seen from the fact that the ratios vary from 7·23 to 0·23 per 1,000 of the population.

The following 49 Local Authorities report the highest ratios, and it will be seen that none of them falls below the mean of 2·44 per 1,000 :—

Cardigan C.	...	...	7·23	Hertford C.	...	...	3·40
Walsall C.B.	...	...	5·75	Isle of Wight C.	...	...	3·26
Devon C.	...	...	5·35	Birmingham C.B.	...	...	3·22
Berkshire C.	...	...	5·07	Merioneth C.	...	...	3·19
Rutland C.	...	...	4·60	York C.B.	...	...	3·16
Reading C.B.	...	...	4·54	Southampton C.B.	...	...	3·13
Somerset C.	...	...	4·49	Smethwick C.B.	...	...	3·09
Nottingham C.B.	...	...	4·40	Leicester C.	...	...	3·02
Suffolk, E. and W.	...	...	4·37	Bath C.B.	...	...	2·98
Plymouth C.B.	...	...	4·35	Hereford C.	...	...	2·94
Ipswich C.B.	...	...	4·17	Leeds C.B.	...	...	2·92
Shropshire C.	...	...	4·08	Essex C.	...	...	2·91
Soke of Peterborough C.	...	...	4·03	Birkenhead C.B.	...	...	2·78
Cambridge C.	...	...	3·82	Anglesey C.	...	...	2·77
Oxford C.B.	...	...	3·64	Monmouth C.	...	...	2·76
Radnor C.	...	...	3·61	Stafford C.	...	...	2·73
Burton-on-Trent C.B.	...	...	3·60	Pembroke C.	...	...	2·68
London C.	...	...	3·59	Portsmouth C.B.	...	...	2·60
Darlington C.B.	...	...	3·54	Leicester C.B.	...	...	2·59
Oxford C.	...	...	3·52	Brecknock C.	...	...	2·58
Wiltshire C.	...	...	3·50	Caernarvon C.	...	...	2·52
Bristol C.B.	...	...	3·49	Newport C.B.	...	...	2·50
Cornwall C.	...	...	3·45	Bradford C.B.	...	...	2·46
Cumberland, Westmorland and Carlisle C.B.	...	...	3·43	East Sussex C.	...	...	2·45
				Northampton C.B.	...	...	2·44

On the other hand, there were 8 Authorities who reported numbers below 1 per 1,000 :—

Huddersfield C.B.	...	...	0·97	Carmarthen C.	...	...	0·79
Stoke-on-Trent C.B.	...	...	0·90	South Shields C.B.	...	...	0·74
West Hartlepool C.B.	...	...	0·88	Bournemouth C.B.	...	...	0·66
Merthyr Tydfil C.B.	...	...	0·83	Huntingdon C.	...	...	0·23

The number of cases notified by Local Education Authorities in 1931 was 3,780.

Increase in notifications during—

1931	...	...	...	...	...	...	...	112
1930	...	...	...	...	...	...	...	394
1929	...	...	...	...	...	...	...	509

As evidenced by the returns no cases have been notified by Local Education Authorities to the following seven Local Authorities during the past year :—

Huntingdon C.	Flint C.
Soke of Peterborough C.	Merioneth C.
Brecknock C.	Radnor C.
Dudley C.B.	

The following authorities have had only five—or less than five—cases notified to them by Local Education Authorities during the past year :—

Cambridge C.	Hastings C.B.
Isle of Ely C.	Worcester C.B.
Chester C.B.	Dewsbury C.B.
Gateshead C.B.	Halifax C.B.
Canterbury C.B.	Rotherham C.B.
Parts of Holland C.	Anglesey C.
Lincoln C.B.	Cardigan C.
Northampton C.B.	Caernarvon C.
Rutland C.	Denbigh C.
Bath C.B.	Merthyr Tydfil C.B.
Bournemouth C.B.	Montgomery C.
Burton-on-Trent C.B.	Pembroke C.
Eastbourne C.B.	

Of the 3,780 cases notified in 1931, 400 have been placed in institutions, 81 under guardianship, and 2,783 under statutory supervision ; no action has been taken in 442 cases. We have no doubt that a far larger number of these defectives should have been placed in institutions if there had been accommodation for them ; but it is satisfactory to note that Local Authorities are beginning to realize that something can be done for defectives by way of supervision pending colony provision. This is seen by the fact that the percentage of cases where no action has been taken has declined from 22·5 in 1925 to 11·7 in 1931.

3. COMMUNITY CARE.

The Wood Committee's Report suggests that two-thirds of the mentally defective population in England and Wales may be left to live in the community without undue risk to themselves or others *if adequate provision is made for their care, training and protection*. But of the remainder—estimated at, approximately, 100,000—who are in need of institutional care, only 28,000 are at present in institutions under the Mental Deficiency Acts.

In this situation the disasters liable to occur amongst defectives living in the community can only be appreciably diminished by :—

- (a) A more discriminating use of existing beds, and
- (b) improved methods of community care for defectives who remain at home or are sent out from institutions.

We propose now to discuss the different methods of community care.

(a) *Licence.*

In considering the dearth of beds it is to be borne in mind that, while there are many cases living in the community who are in urgent need of institutional care, there may still be in institutions some places occupied by defectives who could be equally well cared for outside.

To adjust this—*i.e.*, to make the best use of beds in institutions and to afford to selected defectives an opportunity for a return to community life under the most favourable conditions—we advise a judicious use of licence. This calls for the closest co-operation between the Managers of Institutions and Local Authorities. On the one hand the Managers should keep the cases in the institution under constant review in order to judge which have improved sufficiently to justify a trial on licence outside. On the other hand the Local Authority should provide the means of finding suitable licensees and of ensuring the necessary training, occupation, employment, and supervision in the community.

The advantages of licence consist chiefly in its elasticity and the absence of formalities. Any scheme which involves placing defectives out with employers or with foster parents must be elastic. Frequent changes are to be expected and the ease with which defectives on licence can be recalled temporarily to the institution or their licence revoked facilitates the working of the scheme and may avert disaster.

It will also be found that employers are willing to take a defective on licence whereas they will not accept the responsibility of guardianship, and that parents and foster parents are relieved by the knowledge that, in the event of any difficulty, their child will at once be re-admitted to the institution.

The special reasons which make a transfer to the more definite powers of guardianship desirable are discussed more fully under the heading of guardianship. But it is the view of our Board that prolonged licence lasting over an indefinite period is often the best and most practicable means of ensuring the necessary community care for defectives leaving institutions.

Licence therefore holds an important place in any humane and economical scheme for the care of the mentally defective. It is recognized that certain risks are involved. On the other hand, experience already gained shows clearly that by systematic care and wise judgment risks can be minimized. Where serious failure has occurred there is evidence to indicate that it is due

mainly to injudicious selection of cases or of licensees, or to inadequate after-care.

With these general principles in view, we desire to put before Local Authorities and Managers of Institutions the following main considerations, which are based on the experience of the working of the Act during recent years.

(1) *Selection of Cases for Licence and Institutional Training.*—The success of licence depends on the choice of the defectives to be sent out, and this in turn depends very largely on the system of training in the institution. It is one of the aims of institutional training to fit defectives for greater independence and, if possible, in certain cases for a return to life in the community. With this end in view graduated schemes of training should be introduced. The schools, the workshops, guiding, scouting, camping, games, hobbies, all lead to increased responsibilities and the stabilization of behaviour. Parole is the first step for testing the capacity for greater freedom outside the institution and this may be followed by opportunities to go out to daily work from a hostel branch of the institution. Thus, by the time the Authorities have to consider the question of licence, they would have before them proof of the patient's capacity and trustworthiness outside as well as inside the institution, and the selection of cases based on the results of these trials is likely to be correspondingly sound.

In the actual selection of defectives for licence the following considerations should be kept in view :—

- (a) Higher grade defectives who, after training, prove capable of steady behaviour and of performing useful work, can be sent to the care of employers or to parents, relatives or friends.
- (b) Lower grade defectives, if trained to good and independent habits and to the performance of simple tasks, can be placed with foster parents or with parents or relatives.
- (c) Children are usually sent to institutions because it has been found impossible to train and care for them adequately at home. It is, therefore, undesirable that licence should be recommended until their period of training is finished, unless home-training is available or the child can attend an occupation centre.
- (d) The great majority of defectives at present in institutions are permanently unfitted for community care. These include the lowest grade children and adults, the physically helpless, most epileptics, destructive and mischievous imbeciles, persistent thieves, high grade immoral or erotic boys or girls and those whose characters appear to be incapable of stabilization.

(2) *Choice of Licensee and of Environment.*—However suitable the defective selected may be for licence, he remains more dependent than the ordinary person upon his environment for success or failure. The choice of the right licensee is therefore of primary importance in any scheme of community care.

The statutory regulation No. 239 provides that the persons granting or consenting to leave of absence "shall before doing so satisfy themselves as to the suitability of the place to which the

patient will be taken and as to the means of care and control which will be available."

As a matter of practical experience, it has been found that parents are generally less able to control their defective children than an unrelated guardian, and that if the defective returns to the same environment and influence which necessitated his removal to institutional care, it is likely that the trouble will recur. Accordingly, the Local Authority or the Managers will generally find it necessary to select a suitable place other than the home to which the defective can go when considered fit for licence. This is a matter of considerable difficulty. It is only after much patient investigation and visiting that the suitable employer or foster-parent can be found and the appropriate defective singled out to be placed under his care. The work requires knowledge, experience and time. In some places it is undertaken by the Managers or Superintendent of the institution; in others a Guardianship Association has been formed; and in others again the Local Authority do the work through their own Officers or through a Voluntary Association. In the larger institutions it has already been suggested that a trained social worker might be employed on the staff. Whatever the machinery, the closest co-operation between the institution, the Local Authority, and the other agencies working for defectives is essential.

When a suitable vacancy has been found, and before licence is granted to the patient, the licensee should be instructed as to the needs and nature of the defective and warned of his responsibilities, more especially regarding moral dangers and the necessity of preventing friendships with the opposite sex. If difficulties arise, the licensee should be advised at once to report the matter to the Supervision Officer and to the Managers of the Institution in order that they may take the necessary steps, as it may be essential to transfer the defective to another licensee or to recall him to the institution.

In addition to the degree of supervision exercised by the licensee, other important considerations are the opportunities for recreation and outdoor life, the accommodation provided and especially the possibilities for continued training, occupation, or employment. The further development of Occupation and Industrial Centres would diminish the danger of idleness which is at present one of the frequent causes of failure in cases sent out on licence.

For the higher grade defective it is a great advantage if he can be placed within reach of the institution so that he can return there in his spare time and continue to receive help and advice and take part in the recreations and entertainments.

(3) *Visitation and Supervision.*—After the defective has been duly placed out on licence in the community the essential requirement is visitation and supervision. Regular friendly visitation

is necessary to ensure that help will be at hand when required to meet the varying needs of the case. The Visitor, preferably a woman with experience and training who will usually be the same person as has been employed to select the licensee, should possess the experience and understanding which will enable her to act as adviser and friend, both to the defective and to the licensee. Periodic reports will be required from the Visitor by the institution and by the Local Authority.

Occupation Centres and Industrial Centres, in addition to providing training and employment, afford a very effective means of supervision. Holiday camps and clubs are also proving to be valuable adjuncts in licence and guardianship schemes.

The need for constant vigilance and the value of the power to recall a patient promptly in any of the varied contingencies that may arise are illustrated by the following figures from a large certified institution where the system of licence is constantly used :—

On licence during the year	...	...	...	...	...	152
Returned to institution during the year	...	...	...	...	...	29
The reasons for recall to the institution were as follows :—						
Holidays or medical treatment	...	...	...	...	...	12
Temporary situations or between situations	...	...	...	...	...	4
Change of condition of guardian or insufficient care	...	...	...	...	...	7
Unsuitable for licence	...	...	...	...	...	4
Bad behaviour	...	...	...	...	...	2

The regulations provide that licence can be revoked at any moment if the patient or the surroundings prove unfit. On the other hand, licence can be prolonged if it is proving successful. It is, therefore, recommended that except in cases of holiday leave, a licence should always be granted for not less than six months and in most cases for a year. Reports should be obtained as to progress as frequently as the nature of the case indicates.

The Managers should, in our opinion, never take steps to send a defective on licence, except for a period of 48 hours, without first obtaining the approval of the Local Authority concerned. A regulation requiring this has been included in the new regulations which are now under consideration.

On 1st January, 1932, there were 1,503 defectives on licence from institutions, an increase of 176 on the preceding year. During the year under review 517 had for various reasons been recalled to institutions.

(b) *Guardianship (Section 30 (d)).*

Guardianship should, in our view, be regarded as chiefly useful in cases where lifelong care and protection are necessary, and where the patient has shown himself to be sufficiently stabilized and socially adaptable to enable him to live in the community if adequate control is provided. From the examination of cases where application for discharge has been made, it

seems that some Local Authorities have not appreciated that mental defect is a permanent condition and that few defectives ever attain an adult mentality but remain children all their lives. Such undeveloped adults require permanent care of a kind that can often be provided by guardianship under the Mental Deficiency Act.

The powers of the guardian are similar to the powers of a parent over his children up to the age of fourteen. The continuance of these powers is necessary to protect the defective over that age. For example, defectives who may have been doing well and earning the whole or part of their living under parental control may, for insufficient reasons, abandon their work and leave home. If the defective is under guardianship, the guardian, whether the parent or other person, has power to prevent this. The guardian can also exercise sufficient control to discourage undesirable companionship and anti-social behaviour. Furthermore, on the death or incapacity of the guardian the Local Authority is responsible for obtaining a varying order, and continuity of care and protection for the defective is thus ensured.

The selection of guardians presents considerable difficulty. The use of guardianship has hitherto been limited by the difficulty of finding suitable guardians who are willing to undertake the responsibility involved. The formalities sometimes prove a deterrent, and parents frequently do not appreciate the need of obtaining further legal powers over their own children. These difficulties could be largely overcome by careful explanation and persuasion, especially if given by a trained and experienced Supervision Officer. There are many cases who have been for years on licence and proved themselves capable of leading a protected life in the community who could be safely transferred to guardianship if suitable guardians could be found. The selection and instruction of guardians should form a definite part of every Local Authority's Mental Deficiency service.

The total number of cases under guardianship for whom Local Authorities were responsible on 1st January, 1932, was 2,147, an increase of 315 cases during the year, as compared with an increase of 306 cases during 1930.

It is satisfactory to record that this form of community care is increasing, but there are still 15 Local Authorities who have no case under guardianship, and 29 others have only one or at the most two cases.

In order to form some estimate of the way in which Local Authorities are carrying out their duties under this section of the Act we have this year made a special examination of 207 cases placed under guardianship by four Local Authorities and the results are tabulated below.

The tables do not include all the guardianship cases in these four areas, but the cases have not been specially selected and were taken as they first came to hand.

(i) Our first table deals with numbers—

				Under Guardianship.	Examined.
Nottingham C.B.	...	...	...	148	119
Plymouth C.B.	...	...	...	20	15
Somerset C.	...	...	...	51	47
Devon C.	...	...	...	26	26
				<hr/>	<hr/>
Total	...	...	...	245	207
				<hr/>	<hr/>

(ii) Proportion of guardianship cases to known numbers of defectives in each area, with ascertainment per 1,000 of the population :—

				Proportions.	Ascertainment.
Notts C.B.	...	...	...	1 in 8	4.40
Somerset C.	...	...	...	1 in 36	4.49
Plymouth C.B.	...	...	...	1 in 45	4.35
Devon C.	...	...	...	1 in 94	5.35

It would be an advantage if we could form a reliable estimate of the percentage of known defectives likely to be suitable for guardianship in any area, but for this our information is at present too incomplete. The following considerations may, however, be of some interest. Our general survey of this work as done in Somerset leaves us with a vivid impression that it has been carried out with care and wisdom both in the selection of guardians and of cases for guardianship. Our reports show that in this district 40 out of the 47 cases examined are suitable for guardianship. Somerset has considerable institutional accommodation and a high ascertainment, and is therefore likely to know of nearly all the cases in the area and unlikely to be tempted through serious lack of accommodation to place unsuitable cases under guardianship. We are therefore inclined to think that the figure given for Somerset, namely, 1 in 36 of the defectives known to the Local Authority, might be taken as an approximate indication of the numbers likely to be suitable for guardianship in any area. In Nottingham 148 cases, namely 1 in 8 of the defectives known to the Local Authority, have been placed under guardianship. Of these 119 have been examined and 56 are reported as suitable for guardianship; 27 are unsuitable, and in 36 cases their suitability is very doubtful. But Nottingham has had to fall back on guardianship for want of institutional accommodation—a want which we are glad to think will be remedied in the future. Of the 15 Plymouth cases examined, 12 are reported as suitable for guardianship, one is unsuitable and two are doubtful. The deduction to be drawn here is that Plymouth has not yet found all the cases suitable for guardianship in the area, but that a satisfactory proportion of cases are successful. Of the 26 Devon cases, 19 are reported as suitable and seven are doubtful. The small number of cases in this area is to some extent accounted for

by the fact that there are a number of defectives on licence from Starcross. Licence in Devon has probably been used for some cases that might in other areas have been placed under guardianship.

The following tables are not complete in every particular but they are of interest as showing the general results of the reports obtained.

1. *General Conditions* (including such matters as health, clothing, occupations, etc.)—

			Good.	Fair.	Bad.
Nottingham C.B.	...	...	52	34	24
Somerset C.	...	...	41	5	1
Plymouth C.B.	...	...	14	1	0
Devon C.	...	...	16	9	0

2. *Suitability of Guardian*—

			Suitable.	Doubtful.	Unsuitable.
Nottingham C.B.	...	...	58	31	20
Somerset C.	...	...	42	5	0
Plymouth C.B.	...	...	14	0	1
Devon C.	...	...	21	5	1

3. *Under Guardianship of*—

			Parents or Relatives.	Non-related Guardians.
Nottingham C.B.	...	...	106	10
Somerset C.	...	...	26	21
Plymouth C.B.	...	...	9	17
Devon C.	...	...	12	13

We have had under consideration the advisability of placing defectives under the guardianship of their parents or relatives, and though some parents are undoubtedly suitable, this is by no means always the case. Among the cases examined the guardians were found to be unsuitable in 22 instances, and in all of these except one, the unsuitable guardian was the parent. Of those classified as "suitability doubtful" 37 are parents and 4 non-related. A number of the parents originally applied for Poor Law Relief and have been reported by the Relieving Officer to the Mental Deficiency Committee. The Mental Deficiency Committee have thereupon placed the defective child under guardianship with the apparent object of giving the parents a weekly allowance. We think this allowance has been used to supply the family needs rather than for the benefit of the defective in matters of training and special protection. Parents seem to have regarded the allowance simply as Poor Law Relief and not to have appreciated the special duties for which the help is given. Some parents seem to have accepted the allowance and at the same time denied the existence of mental defect in the child—a state of affairs which distinctly militates against adequate control or care.

4. *Defectives earning wages—*

Nottingham C.B.	...	...	...	...	...	5 out of 119
Somerset C.	...	...	...	...	...	10 „ 47
Plymouth C.B.	...	...	...	...	...	2 „ 15
Devon C.	...	...	...	...	...	5 „ 26
Total	...	...	...	...	...	22 „ 207

The wages vary from 6d. a week pocket money to 40s. a week. The latter sum has only been earned for a short time in one case and the man is now on the dole. Only seven can be considered self-supporting.

It will be seen that only a very small number are wage earners, only 22 out of 207 or about one-ninth. This is in marked contrast to the wage earners in the group of 300 cases on licence which we examined last year. In this group 178 were wage earners, and 110 or more than one-third of the 300 were estimated as self-supporting.

This difference is not entirely explained by a difference in mental grade but may be partly accounted for by the fact that hardly any of the guardianship cases have been in an institution, whereas all the licence cases have been trained in an institution before being sent out on licence. We are forced to the conclusion that a defective's chance of becoming a useful member of society under community care is materially increased by preliminary training for some years in an institution.

In conclusion we give the age-groups for the cases we have examined :—

Under 10	...	...	...	...	...	...	2
10 and under 20	...	...	...	...	...	...	36
20 „ „ 30	...	...	...	...	...	...	98
30 „ „ 40	...	...	...	...	...	...	32
40 „ „ 50	...	...	...	...	...	...	19
50 „ „ 60	...	...	...	...	...	...	18
60 „ over	...	...	...	...	...	...	2
Total	...	...	...	...	...	...	207

It will be seen that the adults far outnumber children and adolescents.

(c) *Supervision (Section 30 (b)).*

Supervision is the form of community care carrying with it the least restrictions, but which none the less plays a vitally important part in helping defectives and in preventing them from becoming a heavy public charge.

The number of cases under statutory supervision on 1st January, 1932, was 27,970, an increase of 2,360 during the year, which may be compared with increases of 2,004 and 3,100 for 1930 and 1929 respectively. Those under voluntary supervision numbered 21,079.

The increasing activity shown in this direction is satisfactory,

although it is to be feared that many cases are still placed under supervision because there is no accommodation in institutions available. This imposes an impossible task on the supervising officer ; community care is bound to fail in the case of a defective living in bad surroundings or of one who needs the more constant care and control provided in an institution.

We believe, however, that supervision by experienced officers supplemented by day-training centres and home-training is an invaluable means of observing and of protecting that large class of defectives living in the community who show no immediate need for more effective control.

In some areas Local Authorities employ their own supervising officers, whilst in others the duties are delegated to Voluntary Associations, who, in addition, undertake the care of defectives not "subject to be dealt with." Voluntary supervision, as an adjunct to ascertainment, is a valuable means of ensuring the notification to the Local Authority of any case for whom changing circumstances may necessitate statutory care.

It should be noted here that in 442 of the 3,780 cases notified this year by Local Education Authorities no action has been taken by the Local Authority. We doubt whether Local Authorities yet fully realize that notification by the Local Education Authority under section 2 (2) of the Act, whether for institutional care, guardianship or supervision, renders the child "subject to be dealt with." Failure to take action at that moment deprives him until he gets into some kind of trouble of the care he has been shown to need. In order therefore that this opportunity for preventive treatment may not be lost, any case notified by the Local Education Authority should be placed under statutory supervision failing other more appropriate action.

The following Local Authorities still have no cases under statutory supervision :—

Wallasey C.B.	Cardigan C.
South Shields C.B.	Carmarthen C.
Huntingdon C.	Merioneth C.
Nottingham C.	Pembroke C.

In addition to the above the following Authorities have less than 10 cases under statutory supervision :—

Grimsby C.B.	...	...	2
Dudley C.B.	...	...	2
Caernarvon C.	...	...	8

4. DAY CENTRES, CLUBS AND HOME TRAINING.

One hundred and eighty-two centres are now functioning (1st January, 1932). These include :—

			<i>Conducted by—</i>	
			Voluntary Associations.	Local Authorities.
Occupation Centres	...	...	115	41
Industrial Centres and Classes	...	...	13	4
Clubs and Evening Classes	...	...	9	—

Twenty centres have been opened during the year ; nine have been closed and, in a certain number of cases, two centres have been merged into one.

Forty-five Occupation Centres and six Industrial Centres are whole-time, i.e., are open for 10 or 11 sessions weekly.

The Clubs meet for recreation and handwork on one day in the week, usually in the evening ; six of these are run by Toc H. under the auspices of Voluntary Associations, two for girls and four for boys.

The number of defectives under supervision on the registers of all Centres on 1st January, 1932, was 2,924, an increase of 216 since last year. This number is classified as follows :—

	Males.	Females.	Total.
Under Statutory Supervision ...	1,397	1,083	2,480
Under Voluntary Supervision ...	231	213	444

Cases under guardianship and on licence are not included in these figures.

Home training is being systematically organized in four areas (Middlesex, Suffolk, Gloucestershire Joint Board and Wiltshire). In others it has resolved itself into the development of small training centres meeting once or twice weekly. In other places again home training is being introduced in individual cases by the supervising officers.

Our reasons for urging the development of day training for defectives living in good surroundings have been put forward in previous Reports and it is much to be regretted that there are still areas in which no provision of this sort has yet been attempted. Now that the increase in colony beds is likely to be slowed down owing to financial conditions there are additional reasons for urging that this comparatively inexpensive form of training should be made available for those who are denied the benefits of colony care. In considering whether a defective can be safeguarded in the community one of the first questions to be asked is : How can he be trained, occupied or employed ? Sometimes the necessary occupation and training already exist in the defective's own home ; but in these days of unemployment there is seldom work to be found for feeble-minded youths, and in the case of children the necessary training is rarely available at home. The active defective who is unoccupied and untrained is a nuisance and even a danger to himself and to others. No form of community care can be effective unless some provision for his training and occupation is ensured ; without it supervision, guardianship or licence is apt to prove vain. Both on the grounds of expediency and economy therefore we urge the development of (1) Occupation Centres for the training of imbecile children and adults where they will learn self control, good social habits and simple manual work that will make them useful in their own homes ; (2) Industrial Centres for older boys and girls of a higher grade mentality and capable of doing useful work, in which a small payment can

be made for work done or for regular attendance ; (3) Home training schemes in rural areas for training defectives and occupying them in their own homes.

The development of this work must necessarily vary in accordance with the needs and geographical conditions of each area. It is of interest to compare in detail some of the more progressive schemes, both for home training and for centres.

Middlesex.—In Middlesex the organization of Day Centres and Home Teaching is carried out for the Local Authority by the Central Association for Mental Welfare. A special Committee of the Association on which are representatives of the Middlesex Local Authority and of local Centre Committees directs the work. There is a general supervisor with a part-time assistant working under her who pays preliminary home visits, arranges for attendance at the centres, supervises the home teachers and maintains the standard of the work at a high level.

Middlesex, with a population of 1,638,521, has to meet urban and rural needs. Six whole-time Centres have been established and one boys' craft class. There are the names of 219 defectives on the centre registers and 126 are being trained in their own homes. Four home teachers are employed and each centre is under an experienced supervisor. A report on the work says : " We have pursued our policy in trying to fit every case, particularly the younger children, into the various centres and only when our efforts fail in this direction do we transfer them to the Home Teaching list. The guiding still presents the greatest problem. . . . Generally speaking we find the parents willing and even anxious for centre training for their children and disappointed when it is not possible to arrange for them to attend."

In spite of the difficulty referred to it is noted that 127 out of the 219 cases on the register are brought to and from the centre by guides. All the centres, with the exception of the boys' craft class, admit both boys and girls, the ages ranging from 6 to 45. Medical examination of the children by the School Medical Officer has taken place in all the centres except one. Progress books, case sheets and medical records are kept at all the centres.

Dinners are provided at a cost of 4d. per head.

Sales of work during the year have amounted to :—

Occupation Centres	...	...	...	...	£21	12s.	7d.
Boys' Craft Class	...	...	...	...	£12	14s.	5d.
Home Teaching	...	...	...	...	£20	11s.	6d.

Forty children were taken to a holiday home for a fortnight in July and various other outings and parties were arranged.

Special features of the work in the centres are the use made of one as a demonstration and training centre for students, the special handwork classes taken by one of the home teachers, which includes the use of a sewing machine, and the organization of the crafts class for older boys. This class is held in the same

building as the children's and girls' centre, and is taken by a male instructor under the general direction of the woman supervisor. Twenty-two lads attend from 10 a.m. to 4.30 p.m., and are taught carpentry, chair-caning, etc. They have daily gymnastics and are also taken out for games and are taught how to box. On certain afternoons some of the boys join the girls for singing, dancing and for a "3 R" class. The following quotation is from the report already referred to: "The attendance during the year has been remarkably good. If a boy attends four days out of five he is allowed pocket money at the rate of 3d. per week. When articles are sold 25 per cent. is added to the actual cost of the materials and this is pooled and divided amongst the boys once a quarter. Their money is handed to them in pay envelopes and great excitement prevails on "pay" day. A mother of one boy who earned 3s. said to the Supervisor "You would think our John was bringing in £3, he was so proud of it." The fact that they have actually earned enhances their self respect tremendously."

The cases taught in their own homes by the visiting home teachers are for the most part physically helpless or adults, or children for whom attendance at a centre is impossible. Sixty-five are under guardianship and 61 under statutory supervision. Each teacher has an average of 32 pupils on her list. Visits are paid fortnightly or more seldom in cases where some handwork has been taught and it becomes mainly a question of providing material, general supervision and disposing of the work.

One of the strong points of the Middlesex scheme lies in the work done by the general supervisor. By introducing new ideas and new work she keeps the supervisors in touch with modern methods and encourages them in what may otherwise be a very lonely and isolated job. The use of one of the centres as a place of training for other supervisors also encourages the progressive atmosphere in these centres.

Suffolk.—Centres and home training are carried out for the Suffolk Local Authority by the Suffolk Mental Welfare Association. Four Centres have been started in different parts of the county.

The home training is carried out by the Secretary and her two assistants, one of whom was appointed because of her expert knowledge of handicrafts. No teachers are appointed specifically as such. At the first visit to any defective notified to the Voluntary Association for supervision the desirability of training in a centre or in the home is considered. Wherever practicable small groups of defectives meet and are taught in a class together. Otherwise they are given individual teaching in their homes. The parents are usually found to be co-operative and are shown how to carry on the training between the visits. They express real appreciation of the improvement in their children, whom they have often given up as hopeless. Pupils are paid for saleable work; during the year sums varying from £2 14s. to 1s. were paid to 27 defectives.

The following are the numbers receiving home training :—

				Over 16.	Under 16.	Total.
Licence	...	...	...	12	—	12
Guardianship	...	...	...	10	2	12
Statutory Supervision	...	...	...	8	13	21
Voluntary Supervision	...	...	...	8	—	8
				—	—	—
	Total	...	...	38	15	53
				—	—	—

This is a sound scheme and shows valuable results. Provided the officers of Voluntary Associations have knowledge of training and handicrafts and enough time, home training can well be combined with the duties of supervision. Supervision is thereby made more effective and the danger of overlapping in home visits is avoided.

Wiltshire.—In Wiltshire, where four Occupation Centres have been established by the Voluntary Association, it is usually found more desirable to bring children in to centres than to teach them in their own homes. Thirty defectives are, however, being taught in their own homes by the Secretary of the Voluntary Association and by a voluntary helper. Apparatus and material of a suitable nature is supplied and parents and guardians are instructed in its systematic use.

Gloucestershire.—The Gloucestershire Joint Committee for the Mentally Defective arranges for the home training of 19 defectives who are under statutory supervision. Four teachers are employed who receive a small payment in addition to their travelling expenses. The frequency of the visits varies, but in most instances they are paid weekly. These cases are also visited periodically by the County Health Superintendents.

Staffordshire.—Eight whole-time centres have been organized in Staffordshire by the Voluntary Association for Mental Welfare. There are the names of 209 defectives on the registers.

The centres are in charge of a general supervisor and a number of the centre supervisors have attended the course organized by the Central Association for Mental Welfare. A conference is arranged quarterly for the supervisors of centres and other members of the staff of the Voluntary Association, at which papers of practical value are read and discussed. A study week was organized for the second time this year and was attended by all the centre supervisors. Lectures, demonstrations and discussions were arranged as well as a whole-day visit to a certified institution.

The summer camp held for the fifth time this year is an outstanding feature of these centres. One hundred and six children attended. The keenness of the children and their parents and the improvement in mental and physical alertness and in behaviour resulting from the camp is remarked upon. The total cost of the camp—£98—was raised by the local Committees, subscribers and parents.

Voluntary contributions to the centres amounted to £254 in the year; £156 was raised towards the centre funds from sales of the children's handwork, and the weekly contributions of parents amounted to £75.

The keen spirit that is noticeable in these centres is, it is believed, largely due to the opportunities given to the supervisors to enlarge their experience and to exchange ideas with other workers amongst the mentally defective. The activity of the local Committees working in the district covered by each centre and the public interest shown are other noticeable features of the work in Staffordshire.

Liverpool.—An interesting experiment is being tried at Liverpool where a large house has been leased as a centre for occupational and industrial training under the direction of the West Lancashire Association for Mental Welfare. Nine rooms are available besides the large dining-room used also for drill and singing. Boys and girls work together in the nursery class and in the classes for medium grade children; separate classes are held for older boys and girls. An evening industrial class and club for lads is also held at the centre.

Exceptional opportunities are offered in a centre of this sort for training the children in practical domestic work. The older girls take part in the cooking and preparation of meals and all children help with the housework, sewing, cleaning, washing of towels, etc. The chairs used by the nursery children and the benches have been made by the boys in their carpentry class.

The pride of possession shown in many constructive ways both by the staff and by the children in this pioneer centre is commented upon.

A Chief Supervisor of Centres, with a staff of assistants, is responsible for the direction of this centre and of four others under the direction of the West Lancashire Association. The total number on the registers is 217.

A summer camp is held for centre pupils and for defectives under guardianship. About 120 persons attended this year and the cost was entirely defrayed by voluntary subscriptions.

Leeds.—The scheme at Leeds, under the direction of the Leeds Mental Care Committee, provides three whole-time Occupation Centres in different parts of the City and two Industrial Centres open for $10\frac{1}{2}$ sessions weekly. The number on the register is 292 and the average daily attendances for the year have been 246.

Under the Leeds scheme children who have proved not to be educable under the Education Acts attend the Occupation Centres. At about the age of 14 boys are transferred to the Junior Training Centre with the object of learning some useful work such as boot-mending and making, tailoring, rug-making, and bundling and splitting of firewood, which work is afterwards carried on on trade lines in the Senior Industrial Centre.

The older girls remain in the Occupation Centres where they form a separate domestic group and are taught practical domestic work under a woman homecraft instructor. There is a separate classification also for the lowest grade children both during lessons and recreations.

The building in which one of the centres is held was formerly a Chapel and Sunday School. It has been purchased by the Leeds City Council and converted into a two-storey building with a large hall and facilities for bathing the children and for domestic training. Another of the centres, where 86 children's names are on the register, was formerly an elementary school.

More, perhaps, than in any other Industrial Centre, Leeds has succeeded in putting the work on a trade basis. Many of the lads are of a fairly high grade mentality and the progressive scheme of training has doubtless contributed to the good work turned out by the boys. All the trainees, both in the Junior and Senior Industrial Centres, receive some payment which varies from 1s. to 10s. weekly. During the year £937 was paid to defectives attending the two centres. The work done is sold to order.

An interesting feature of the scheme is the use made of the centres in placing cases out on licence from institutions or under guardianship. Twenty-six cases over 16 and eight under 16 so placed out are attending the centres.

5. DISCHARGE.

Except at the age of twenty-one, the discharge of defectives rests with the Board of Control. But, as representations in regard to discharge are often made by Local Authorities, it is desirable to indicate the main principles on which the Board proceed. Recommendations for discharge which are received from Local Authorities appear to be generally based on the fact that the defective has been on licence or under guardianship for a considerable time and is apparently well-behaved, well supervised by relatives or employers, and earning wholly or partly his own living.

Unfortunately, it does not follow that because defectives have done well while under licence or guardianship they will continue to do equally well if discharged, for the conditions of licence are such that they create a special environment which contributes largely to satisfactory conduct. These conditions supply what the defective lacks, namely, wisdom, judgment, initiative, and foresight in the management of his affairs. Many defectives have uncontrolled sexual impulses and would give way to excess were it not for the control exercised by the licensee or guardian. Many need help in the expenditure of the money they earn. Others again would throw up their work on the slightest provocation, and it is only the terms of licence which prevent them doing so. Should the defective lose his employment he would not generally

have sufficient initiative of his own to find another situation. Many are incapable of sustained effort and need the forbearance and kindly supervision that licence or guardianship provides. On the other hand, if the defective is discharged he may have to take his place in a competitive labour market with little or no chance of surviving. Complete liberty for the defective frequently means social disaster and they are generally happier under the limited but essential degree of control supplied by licence or guardianship.

Discharge should, therefore, in our opinion, be governed as a general rule by the mental ability of the patient to manage himself and his affairs without the protection available under the Mental Deficiency Act. The fact that he may be living with relatives or employers, who are at the moment supplying the help and protection necessary for him, is not always an indication that he could be safely discharged. Further, the parents may die or be incapacitated by illness, or employers may dismiss the defective. If any of these circumstances occur, the defective is thrown on the world again without protection, and it is not until he is again rendered "subject to be dealt with" under the Act by some social disaster or delinquency, that it is possible for the Local Authority to intervene. Thus the main object of the Mental Deficiency Act, which is to secure continuity of care and control, is frustrated and much of the effort and expense of the previous care and training wasted.

During the year under review, 190 cases under Order have been discharged from all types of Certified Institutions and from Certified Houses.

6. MARRIAGE OF DEFECTIVES AND STERILIZATION.

The number of marriages of defectives reported to the Board in 1931 is 166 (49 men and 117 women). The number of children born in 1931 as the result of the marriages of defectives known to Local Authorities is 103. The number of illegitimate children born to defective mothers and reported to Local Authorities is 177. It is probable that these figures are considerably under the actual ones, as very few Local Authorities have made a complete ascertainment of the defectives in their areas. This year the number of adult defectives known to the Local Authorities amounts to little more than one half of the estimate given in the Wood Report and we may assume that the number of marriages among the other half is greater than among those who are under some kind of supervision. Everyone is agreed as to the desirability of trying to prevent the marriage of defectives, but in order to do this, defectives must first be ascertained. Though the Mental Deficiency Act has now been in operation for 18 years, cases still occur of defectives who are only ascertained after marriage, as the following case illustrates.

A married woman who is said to be an imbecile was only ascertained long after her marriage when she was already the

mother of five children. Her husband was before his marriage a patient in a mental hospital and is reported never to have been of normal mind since his discharge. It is thought that he was always mentally defective. This case was brought to the notice of the Local Authority in consequence of the action of the N.S.P.C.C., who found the home in a deplorable state and the children very much neglected. Other similar instances have been brought to our notice and they show that, until more effective measures are taken for the early ascertainment of defectives, legislative or other steps to prevent marriage can only be of limited utility.

Nevertheless the marriages reported by Local Authorities this year confirm us in the opinion we have expressed in many of our Annual Reports, i.e., that legislative action should be taken to prevent the marriage of defectives who have been placed under Order. Experience is showing that it is possible to train a small number of defectives sufficiently to enable them to be returned from institutions to community care where, if properly supervised and controlled, they can lead harmless and even useful lives, becoming partially and, in some few instances, wholly self-supporting. But even if they can support themselves they seldom earn enough independently to support a wife and family. The work they do is too often irregular and intermittent and we have known them shortly after marriage to be in receipt of Poor Law relief or unemployment pay. Often when defectives marry the supervision and control are removed. They sink back into a state of complete dependence and too frequently become delinquent. Up to the time of marriage the community has spent time and money on protecting and training them and in protecting society from their depredations. The moment marriage takes place further protection of either the individual or the community becomes almost impossible as the law stands to-day. If the defective is on licence, the terms of his licence are broken and there is no one to whom the licence can be transferred. It is generally difficult and sometimes useless to place a woman on licence to her husband or a man on licence to his wife, since in many cases the partner, if not certifiably defective, is of low mentality and not a suitable person to be in charge of a defective. The same applies to guardianship. Yet when defectives assume the responsibility of a household and a family they and their children are in more need of care and supervision than ever before. The Board is faced with the alternative of discharging them or of advising that they should be forced back into an institution. Supervision is of little use after marriage and cannot prevent the advent of children who, whether or no they inherit physical or mental defects, are not likely to become useful citizens when brought up in the environment created by a defective parent. Reluctantly we come to the conclusion that, if defectives are trained to partial self-support and sent out free to marry, the

community is likely to have to face the consequences of more marriages than if these defectives had been left untrained and had drifted to complete dependence before the marriageable age.

We give one of two instances of marriages which have come to our knowledge during the year.

1. A mentally defective woman, aged 28, was married last August and is expecting the birth of a child. Her mother states that she does not consider the defective ought to have been allowed to marry and she attempted to prevent it. The conditions reported are most unsatisfactory and it is stated that the defective cannot do any kind of housework.

2. A defective who has twice been found guilty of offences, namely, indecently assaulting a girl and larceny, was sent to an institution under Order. He was subsequently licensed to the care of his father and he married while on licence. He has had three children, though it is very doubtful if he can earn enough to support a wife and family.

3. A feeble-minded microcephalic undersized man was placed under the guardianship of his father, to whom the Local Authority paid 25s. a week for his maintenance. He married while on licence, and it was stated that his wife, who was pregnant, was living with her mother in a filthy home. Her husband could not support her as he only earned 5s. a week. The wife has since been certified as feeble-minded.

4. A feeble-minded woman was certified under the Mental Deficiency Act and sent to a Public Assistance Institution, from which she was transferred to a mental hospital, where she was said to be suffering from imbecility. She was discharged "recovered" from the mental hospital. She then married and shortly afterwards was re-certified under the Mental Deficiency Act as a feeble-minded person. It is stated that she has again been dealt with by the Local Authority on account of the neglect both by the husband of the defective and by the defective of her children. It was further stated that she had not sufficient intelligence to know how to rear a baby and her infant was puny and ill. The Health Visitor for the district reported the bad conditions obtaining in her home.

5. A feeble-minded woman on leave from an institution has married a convict on licence from Parkhurst Prison. Her husband has now abandoned her.

6. A feeble-minded married woman, aged 29, attempted to murder her two children and tried to commit suicide—the Judge of Assize bound her over to keep the peace. She was soon in trouble again for stealing and was certified and sent to an institution. This woman's husband has written to us asking for her discharge and saying that both he and his wife are willing that she should be sterilized. The managers of the institution have sent her back to her husband on licence.

The question of the advisability of some measure of sterilization has again been brought forward by various Local Authorities and we are glad to record that the Minister of Health has approved the appointment of a Committee to consider the scientific aspect of this difficult subject.

7. DEFECTIVES IN MENTAL HOSPITALS.

Last year in considering this subject, we gave a table showing the mental condition of 221 children under 15 years of age who had been admitted to mental hospitals during 1930 and we indicated that nearly all of them would have been more suitably provided for, both for their own sakes and for the sake of the patients for whom a mental hospital is primarily intended, in certified institutions and colonies for defectives. We showed how impossible it was to classify, to train and to employ the higher grades in mental hospitals and how extravagant it was to use hospital beds when both beds and maintenance could be provided in colonies at a cheaper rate. This year (as indicated on p. 8) we have obtained further valuable facts by making a careful investigation in two large mental hospitals in one county with the object of ascertaining how many mental defectives they contained who could be more appropriately dealt with in a less expensive type of institution.

We were fortunate in securing the help and co-operation of the Visiting Committees of both mental hospitals and of their medical superintendents. Each superintendent was asked to prepare a list of all the patients considered by him to be mentally defective. Two medical Commissioners then visited the hospitals and examined individually all the patients whose names were on the list.

Out of the 606 patients specially examined, 449 were readily recognizable as mentally defective, and the Commissioners state that, if it had been necessary to carry the enquiry further, they had little doubt that a larger number would have been found to be mentally defective.

The primary object of the enquiry was, however, to ascertain how many of these defectives could be transferred to a Colony or Public Assistance Institution. This is shown in the following table :—

THE TWO HOSPITALS.

Age- Groups.	Suitable for removal to—						Should remain in—										
	Colony.						Mental Hospital.										
	F.M.	Imb.	Id.	Total.	F.M.	Imb.	Id.	Total.	F.M.	Imb.	Id.	Total.					
Under 30	M.	21	18	17	56	—	—	—	—	11	—	—	11	32	18	17	129
	F.	17	17	17	51	—	—	—	—	9	2	—	11	26	19	17	
30-39.	M.	13	17	4	34	8	12	—	20	5	5	1	11	26	34	5	115
	F.	9	5	5	19	11	3	1	15	16	—	—	16	36	8	6	
40 and over.	M.	6	—	1	7	48	40	—	88	8	3	—	11	62	43	1	205
	F.	2	—	4	6	54	27	—	81	12	—	—	12	68	27	4	
All ages.	M.	40	35	22	97	56	52	—	108	24	8	1	33	120	95	23	449
	F.	28	22	26	76	65	30	1	96	37	2	—	39	130	54	27	
Total		68	57	48	173	121	82	1	204	61	10	1	72	250	149	50	449

It will be seen, therefore, that of the 449 patients classified as mentally defective, the Commissioners thought that 173 (39 per cent.) could be suitably dealt with in a Mental Deficiency Colony, 204 (or 45 per cent.) in Public Assistance Institutions if specially adapted for defectives, while 72 (16 per cent.) should remain in the mental hospitals as they require the special nursing and supervision provided in such hospitals. The above figures show that over 11 per cent. of the total number of patients in these two hospitals could be removed to a simpler type of institution.

It must be remembered, however, that the above allocation of patients assumes the existence of Public Assistance Institutions or parts of such institutions which can be spared from Public Assistance purposes and set aside for the reception of mental defectives, or of suitable simple buildings to be erected on colony sites. Public Assistance Institutions are suggested solely with a view to economy. If they are not obtainable, the cases allotted to them could be accommodated in the colony. In either case, we assume however, that a competent staff both in experience and numbers would be engaged. It is only on these assumptions that we could recommend the general transfer of large numbers. A few individual cases might be transferred to existing institutions where accommodation has been provided for their particular type and where vacancies can be obtained, but any general transfer would only be advisable on the above conditions.

Generally speaking, unless some special reason was found to the contrary, the Commissioners adopted an age classification allocating all cases under 30 to the colony and all over 40 to a Public Assistance Institution. The intermediate group, i.e., those between 30 and 40, have been classified according to their apparent ability or inability to profit by colony facilities.

Patients classified to remain in mental hospitals are those in whom psychosis predominates or who are deemed to be unmanageable except in a mental hospital. Some psychotic features in addition to mental defect were present in a number of patients allocated to the colony or Public Assistance Institution, but such features were slight or in abeyance, and in quite a number of the defectives examined psychosis of some sort had existed in the past but was now no longer evident.

Cot and chair cases and idiots were classified as suitable for a colony, on the ground they need special nursing and medical attention and could be better looked after where there is a resident medical superintendent, and also because few Public Assistance Institutions have suitable wards for their accommodation. They can be more easily nursed in simple pavilion buildings with easy access to verandahs and sanitary conveniences.

Of the 449 cases, 286 were reported as trainable or employable and 163 as untrainable or unemployable. The terms trainable and untrainable and employable and unemployable have been

used to include any capability for employment or training, ranging from the ability to do good cookery or industrial work down to the ability merely to do a little mechanical dusting or perhaps to work only from time to time. Among the large numbers called employable or trainable there are many who are not capable of regular useful work.

All tubercular patients have been classified as suitable for the colony, for special provision will be made for such cases there and it is probable that this could not be satisfactorily arranged in a Public Assistance Institution.

We attach considerable importance to the results of this investigation. It has an important bearing on the serious shortage of mental hospital beds in the country. It is evident that the growing overcrowding of many mental hospitals is in a great measure due to the absence of accommodation for defectives. In the county selected for this test, provision for mental defectives might relieve the mental hospitals to the extent of 377, six years' estimated increase of insane patients. It should be remembered that colony beds for defectives can be provided at about £300 a bed, whereas mental hospital beds are estimated at £500. In addition to the economic considerations, the efficiency of the hospital would be increased by the removal of defectives whose presence disturbs the atmosphere which should prevail in an institution which exists primarily for the proper care and treatment of persons suffering from mental disorder—a large number of whom are curable cases. If, as we have little reason to doubt, a similar percentage of mentally defective patients exists in many other County Mental Hospitals, Local Authorities will be well advised to consider making a thorough investigation of the patients before instituting extensions to their mental hospital accommodation. It may be that, in some cases, if they could transfer the defectives, the Local Authorities would find that it was only necessary to extend by such eminently desirable additions as convalescent villas and admission units.

8. MENTAL DEFICIENCY AND CRIME.

A report has been drawn up on the history of 306 mental defectives who have committed crimes and been dealt with under the Mental Deficiency Acts during the year (1931). This figure is a very small one if compared with the number of persons who, according to the Criminal Statistics for 1930 were found guilty of offences. But although the numbers are small and it is difficult to draw definite deductions, the facts that follow are of serious import to all those who are administering the Mental Deficiency and Education Acts. It must be borne in mind that the 306 cases investigated consist only of those who have been dealt with under the Mental Deficiency Acts. There is another, probably a larger, group of mentally defective criminals and delinquents who are still dealt with as normal persons and who do not on

conviction come to the notice of the Board. Until more information is available about this last group no conclusion can be arrived at as to the relative incidence of crime amongst normal and mentally defective persons.

(i) *Age incidence amongst mentally defective criminals.*

<i>Age.</i>							
14 years and under	...	...	...	...	...	...	25
15 to 21	...	...	...	...	...	...	170
22 to 28	...	...	...	...	...	...	69
29 to 35	...	...	...	...	...	...	21
36 to 42	...	...	...	...	...	...	12
43 to 49	...	...	...	...	...	...	6
50 to 54	...	...	...	...	...	...	3
Total							306

One point of interest in this table is the way in which the incidence of crime reaches its highest point between the ages of 14 and 21, after which age it steadily decreases. This is no more than we should expect. The mental development of a defective does not keep pace with the growth of his body. He lacks reasoning power, judgment and foresight, all of which help to deter the normal adolescent girl or boy from crime; frequently his parents are unfitted to give him the training and environment he needs and at adolescence there is little to deter him from anti-social conduct.

The Criminal Statistics for 1930 show that of the persons found guilty of indictable offences, 42 per cent. were of 21 years and under. Reference to the above table shows that 64 per cent. of mentally defective patients belonging to this age-group.

These figures show that crime occurs relatively more often in the younger age groups amongst the mentally defective than amongst the normal criminals—even taking into consideration the general increase in juvenile crime shown this year in the Home Office Blue Book.* The numbers are perhaps too small to warrant definite conclusions, but the greater proportion of crime committed by juvenile defectives suggests various possible explanations. One reason may be that the mentally defective child is more easily caught than his sharper brother who frequently escapes detection several times before he is finally convicted. It may be also partly due to lack of occupation in leisure hours and to lack of employment. Mentally defective children are less able to find sensible amusements for themselves than normal children and feeble-minded boys and girls leaving school are probably more frequently out of work. Unless feeble-minded children are specially supervised and helped they are excluded from the ordinary child's amusements, games, clubs, scouts, guides, etc.; left in idleness with a feeling of social inferiority, their inactivities are only too likely to be turned into channels of mischief. A partial explanation may also perhaps be found in the fact that those young mentally

* Criminal Statistics, 1930.

defective delinquents who come before the Court and are dealt with under the Mental Deficiency Act, are usually placed under some kind of permanent care, and cannot, therefore, continue to commit offences in adult life. Moreover, a large number of defectives whose defect has not been recognized settle down into Poor Law Institutions at about the age of 30, and are so less likely to commit further offences.

(ii) *Ascertainment.*

Of the 306 cases under review only 57, or 18 per cent., had been notified to the Local Authority by the Local Education Authority or had been otherwise ascertained under the Mental Deficiency Acts. The remaining 82 per cent. came to the knowledge of the Local Authority after committing some offence.

Thirty-six of the cases had been in prisons, Borstal institutions, reformatory and industrial schools, and Poor Law Institutions; 27 others had been in certified institutions or in mental hospitals. Thus in 63 cases, all of whom had been under previous care and observation, their mental defect appears to have passed undetected or to have been considered as no bar to discharge.

These figures are the more striking in view of the fact that the majority of cases appear from the information recorded to be medium grade defectives about whose mental defect there can have been little doubt from childhood upwards. They come from urban areas where there are special schools as well as from rural areas.

Here, surely, are facts that give emphasis to what has been urged earlier in this Report. Absence of collaboration between Mental Hospitals, Public Assistance Authorities, and the Mental Deficiency Authorities may be partly responsible for the gaps in the continuity of care. But recognition of defect in childhood, followed by action on the part of Local Education Authorities and Local Mental Deficiency Authorities, is, we believe, the surest way of lessening the number of crimes, some of a very serious nature, committed yearly by unascertained defectives.

(iii) *How dealt with.*

Two hundred and sixty-two cases were dealt with under section 8 of the Mental Deficiency Act, 1913, which provides that a Court, in lieu of passing sentence upon an offender, may order his detention under the Mental Deficiency Act.

Forty-three cases were dealt with under section 9, which provides that, where an offender undergoing imprisonment is certified to be mentally defective, the Secretary of State may order his transfer from prison or other place or detention to an institution for defectives.

One case was dealt with at the instance of the Local Authority by the usual procedure for an order upon petition under section 6 of the Act.

It will thus be seen that the very great majority of the cases investigated were dealt with under section 8. In some of the others dealt with under section 9, it is difficult to see why they should have been submitted to a period in prison before action was taken under the Mental Deficiency Act. They do not appear, on the whole, to be of a higher grade than those dealt with under section 8, although they have committed more crimes of a serious nature. Seventeen out of the 43 section 9 cases were transferred to the State Institution for violent and dangerous defectives.

The cases dealt with have been placed as follows :—

In Local Authority Institutions	...	...	...	...	150
In contract Institutions	...	...	...	...	45
In Public Assistance Institutions (Section 37)	...	...	...	...	82
In Rampton State Institution	...	...	...	...	21
Under Guardianship	...	...	...	...	8

There are indications to show that Public Assistance Institutions are unable to deal successfully with young and difficult defectives sent through the Courts. Amongst the 82 cases so placed a number were afterwards transferred either to Certified Institutions or to the State Institution. It is very doubtful also whether guardianship provides sufficient control over delinquent defectives to prevent a recurrence of trouble in the community. Two of the eight have already failed under guardianship, in the course of the first year.

(iv) *Nature of the offence.*

The offences committed range from one of murder to cases of simple larceny. They include :—

Offences against the person	...	...	...	...	...	18
Murder	...	...	...	...	1	
Wounding with intent	...	...	...	...	3	
Suicide	...	...	...	...	5	
Assault	...	...	...	...	9	
					—	
					18	
					—	
Arson and stack firing	...	...	...	...	...	6
Warehouse breaking and loitering with intent to commit felony	...	...	...	...	...	36
Sexual offences	...	...	...	...	...	73
Rape	...	...	...	...	1	
Indecent assaults on girls and children	...	...	...	...	32	
Indecent exposure	...	...	...	...	19	
Carnal knowledge of a child	...	...	...	...	4	
Unnatural offence (boys and animals)	...	...	...	...	16	
Incest	...	...	...	...	1	
					—	
					73	
					—	

In addition there are many defectives who have committed larceny. Included amongst these, there are children who have only committed trifling theft, 16 bicycle stealers, and a man who stole a motor lorry and tried to drive it away. There are also 20 instances of defectives found wandering abroad without visible means of subsistence.

The number of serious crimes and the high proportion of sexual offences committed by these 306 mental defectives in the course of the year is remarkable. When it is remembered that they by no means represent the amount of crime committed yearly in the country by defectives, all must be agreed upon the importance of these findings and the need for preventive action on the part of Local Authorities.

9. NUMBERS UNDER CARE.

The mentally defective patients on the 1st January, 1932, numbered 61,326 (males 31,166, females 30,160). Included in this total are the cases under Statutory Supervision, which numbered 27,970 (males 14,921, females 13,049).

A summary of the patients in Institutions and under guardianship is given on the following page, and it is interesting to note that of the total of 33,356 patients under these forms of care, 17 per cent. (males, 21 per cent., females, 14 per cent.), were under 16 years of age.

During 1931 there were increases of 79 in State Institutions, 2,764 in Certified Institutions, 24 in Approved Homes, 352 among those under Guardianship or Notified, and 3,260 among those under Statutory Supervision, while there were decreases of 192 in Public Assistance Institutions approved under Section 37, and of 25 in Certified Houses. These changes resulted in a net increase of 6,262 under care.

10. STATE INSTITUTIONS.*

(1) *Rampton.*

We, have received the following report from Dr. Rees Thomas, who was Medical Superintendent of the State Institution at Rampton until 1st February, 1932, when he became a member of the Board :—

The number of patients resident in the institution on 31st December 1931, was 636 males and 417 females, a total of 1,053. Of this number 48 males and 26 females suffer from epilepsy. During the year under review there were admitted to the institution 74 males and 58 females, of whom 10 males and 4 females were juveniles sent to us for treatment in our children's section. The net increase of patients during the year was 65 (42 males and 23 females).

The table below gives the types of institutions or places from which patients were admitted.

* Institutions for defectives of dangerous or violent propensities established and maintained by the Board of Control under the provisions of section 35.

SUMMARY of MENTALLY DEFECTIVE PATIENTS resident in INSTITUTIONS and under GUARDIANSHIP on 1st January, 1932.

Where maintained.	Received under the Mental Deficiency Acts, 1913-1927.						Received outside the Mental Deficiency Acts.			Total of all Mental Defectives in Institutions and under Guardianship.		
	Under Orders (secs. 5-9).		Not under Orders (sec. 3).		Total.							
	Non-criminal.		Criminal.									
	M.	F.	M.	F.	M.	F.	M.	F.	T.	M.	F.	T.
In State Institutions -	217	317	421	149	8	10	646	476	1,122	646	476	1,122
In Certified Institutions -	6,311	8,067	1,593	409	990	595	8,894	9,071	17,965	9,864	10,100	19,964
In Approved (sec. 37) In- stitutions -	3,610	4,630	528	142	56	61	4,194	4,833	9,027	4,194	4,833	9,027
In Certified Houses -	—	12	—	—	87	99	87	111	198	87	124	211
In Approved Homes -	—	—	—	—	—	—	—	—	—	298	262	560
Under Guardianship or Notified -	1,012	1,157	—	—	18	12	1,030	1,169	2,199	1,156	1,316	2,472
Total -	11,150	14,183	2,542	700	1,159	777	14,851	15,660	30,511 (a)	16,245	17,111	33,356†

(a) Of these cases approximately 1,503 were on Licence from Certified Institutions and 43 from Guardianship.

* Notified cases (sec. 51).

† In addition to the patients in Institutions and under Guardianship, there were on the same date 27,970 patients (14,921 males, 13,049 females) under Statutory Supervision (sec. 30 (b)).

Males. Females.

ADMITTED DIRECTLY AFTER CERTIFICATION FROM :—

Prisons	...	...	...	...	...	11	1
Courts of Summary Jurisdiction—Sec. 8	...					5	1
Courts of Summary Jurisdiction—Sec. 6	...					4	—
Borstal Institutions	...	...	...	...		2	—
Mental Hospitals	...	...	...	...		5	2
Criminal Lunatic Asylum	...	...	...	...		—	1
Farm Reform School	...	...	...	...		1	—
Own Home	...	...	...	...		5	2

ADMITTED ON TRANSFER FROM :—

Certified Institutions	...	...	...	...	25	25
Institutions under Sec. 37	...	...	...	...	15	12
Warwick State Institution	...	...	...	...	—	13
Admitted on Licence	...	...	...	...	1	1
					—	—
Total	...	...	...	...	74	58
					—	—

Admissions.—Ten of the male admissions were children, so that the adult males received—64—represent the considerable reduction of 25 on the number admitted in the previous year. Thirty-three males and seven females were admitted immediately after certification. These were mostly defectives who had become dangerous and violent before they were recognized to be defectives, or before any action had been taken to provide for their supervision and control in an institution.

Classified according to mental grade the admissions during the year were: idiots and imbeciles 26 (male 17, female 9); feeble-minded 97 (male 49, female 48); moral defectives 9 (male 8, female 1).

The moral defectives represent 10·8 per cent. of the male and only 1·6 per cent. of the female total admissions to the institution during the year.

Though this class of defective is, as shown by these returns, relatively small numerically, it should be remembered that only the extreme cases are brought under care. It is becoming more widely recognized that moral deficiency is not merely due to failure of development of the brain resulting from hereditary failures but may and usually does exist as a symptom or a sequel of a very wide range of inflammatory, nervous and mental diseases arising during the early life of the child.

Discharges and Transfers.—Forty-six patients were transferred during the year, and six were discharged. Of these, twenty-three women were sent to The Cape, Warwick, for further training and later reports of them indicate that the majority are making good progress.

Deaths.—There occurred only 7 deaths during the year under review, the death rate being 6·8 per thousand patients in residence. The causes of death were epilepsy, 2; chronic encephalitis lethargica, 2; strangulation, self-inflicted 1; cerebral abscess, 1; and lobar pneumonia, 1. There were no deaths arising from tuberculosis.

General Health.—The general health of the patients has been consistently good. There have been the usual epidemics of influenza and common colds, but the diseases have not exceeded in virulence those of previous years.

It is worth recording again the interesting fact that no case of dysentery, epidemic diarrhoea, typhoid or any infectious or contagious fever has arisen in either the children's or the adult section, since the institution was opened in March, 1920, a period of nearly twelve years.

The diet scale has continued to be satisfactory and the low death rate indicates that food has been sufficient in quantity and that the vitamin content has been maintained. During this autumn we have made one interesting and probably very important experimental addition to our scale. Twice a week we now issue finely minced raw carrot with salmon paste to provide vitamin "A" in sufficient quantity to ensure, according to our present knowledge, a high standard of resistance to disease.

Tuberculosis.—At the close of the year there were 5 female patients under treatment on account of active tubercular disease, but they were, with one exception, making excellent progress towards recovery. We find the treatment of this condition exceedingly difficult because prolonged treatment in bed and medically regulated inactivity leads almost inevitably to violent reactions. But on the whole the results are good. At the moment there are no cases of active tuberculosis on the male side of the institution. From time to time some four or five boys have shown the signs of very early infection, but the condition has always become latent or has gone on to natural cure.

Consultants.—During the year Professor Arthur J. Hall, M.D., D.Sc., F.R.C.P., Mr. E. G. Mackie, M.B., F.R.F.P.S., and Mr. Vincent Townrow, M.B., F.R.C.S., of the Sheffield Royal Hospital honorary staff, were appointed as honorary consultants to the institution. Consultations with them have been most helpful and have led to increased interest in special aspects of our work. I am especially grateful to Professor Hall for valuable advice on the treatment of chronic encephalitis lethargica.

Licence.—Fifteen men and ten women were sent out on licence during the period under review, and at the end of the year 6 males and 5 females were still on licence.

Absconders.—Twenty-seven men and three women were so dissatisfied with institution life that they ran away. One man absconded while on leave of absence but was allowed to remain on licence. Ten men were returned to the institution on the same day that they absconded, and 11 men and 3 women returned after a longer period of absence without leave. Two men were discharged by operation of law.

Juvenile Defectives.—It is nearly two years since we took up the care and training of dangerous and violent defective children under the age of 16 years. Two houses, one for boys, the other for girls, are set apart from the main building and almost out of sight of it. Each house is designed for 36 children with three sitting rooms for smaller groups according to age or mental type. Some 40 per cent. of the children have suffered from sleepy sickness and are now showing the various physical and mental characteristics of that dread disease. In the others the defects are mostly of congenital origin.

We aim at the re-establishment of normal behaviour and happiness of outlook in the child, and though it is often impossible to attain this ideal, prolonged training will produce such improvement in conduct that the child becomes fit for association with other defectives under conditions of normal supervision and care. Before coming to Rampton the combination of home and school training has not been possible because the child has been so difficult to manage that in the interests of other children he has been excluded from all means of associated training. At home he is entirely unmanageable and a danger to other children in the house or immediate neighbourhood.

We find that children who come to us for training show definite and rapid improvement during the first 6 weeks, with then a gradual slowing down of the rate until a standard is reached where the natural longing for association with other children is accompanied, under the supervision of the teacher or nurse, by normal physical and mental reactions to the stimulus of group work and play, and under favourable conditions the improved outlook and behaviour are permanently maintained.

Complete recovery is not to be expected where there has been injury to the brain tissues, and the first object of treatment is to re-establish the child's confidence in himself and his elders, so that training may produce the developments and restraints which are necessary even in the sheltered life which he must lead.

Some of our boys and girls have passed out to other institutions, and those we have transferred to the adult section of our own institution are continuing their training in association with other patients.

An extremely difficult child rarely becomes dangerous in adult life if there has been continuous care and training in an institution. Our own boys, who left school at 16 to go into our workshops for adults, are very different from boys of similar age who have come to us after being allowed to drift and to get into trouble owing to bad behaviour. With our own school-boys the male nurses who took charge of them in the men's section found it very difficult to accept my assurance that the lads had been sent to us as some of the most dangerous defective children in this country. When transferred to the adult section they were mentally flexible and still in the pliable condition of the normal adolescent. The comparison with other delinquents who came to us at sixteen or more, and who had mixed with and fought against their world without care or guidance showed so marked a contrast as to convince my staff that they were dealing with essentially different mental types. These sophisticated boys were antisocial, hardened in character to such a degree as to make care and training an exceedingly difficult problem. But in both the beginnings were alike and the causes similar in intensity and immediate effect.

I can give no better demonstration than the above of the value of continuous care and training to the mentally weak and defective child, even if he be dangerous and the outlook apparently hopeless.

Staff.—We have made another step forward in the arrangements for staff recreation. A covered and heated swimming bath, at a cost of £1,700, was erected out of funds collected by the staff during the preceding years, and now they are reaping the benefit of their foresight and thrift. The bath is open during the summer months.

During the past year 3 female and 10 male nurses have passed the final examination in the Nursing of the Mentally Defective; 13 female and 23 male nurses have passed the preliminary examination. The number of staff in possession of the certificate of the Royal Medico-Psychological Association is now 105—24 female and 81 male nurses.

The general health of the staff has been good and no cases of serious illness have arisen during the year.

I want to express my appreciation of the extent to which my staff have shown forbearance in their work and of their keenness and their attention to training and the theoretical aspects of their duties, whereby they have acquired knowledge to add to their already extensive experience in dealing with dangerous and troublesome defectives.

I am happy to say that the general atmosphere in the institution improves with each passing year.

(2) *Warwick.*

The following is a brief report on the work of the year at the Warwick State Institution :—

Number of Patients, 1st January, 1932 :—

In residence	...	...	...	...	...	...	47
On licence	...	...	...	...	...	...	7
In daily service from hostel	...	...	...	...	...	...	9
Escaped and recaptured	...	...	...	...	...	...	1
Admissions during 1931	...	...	...	...	...	...	24
Discharged	...	...	...	...	...	...	2

Transferred :—

To Rampton State Institution	...	...	...	13
To certified institutions	...	...	...	1

Granted licence :—

To situations (domestic service)	...	...	...	7
To certified institution	...	...	...	1
To Roman Catholic Convent	...	...	...	1

Holiday leave for hostel patients :—

To parents and relations	...	...	...	5
To Seaford	...	...	...	4

There is accommodation in the institution for 50 patients, of whom 37 live in the hospital and 13 in the chaplain's house, which has been adapted as a hostel.

There have been no direct admissions during the year ; 23 women were transferred from Rampton and one, who failed whilst on licence from Rampton, was transferred here. One woman has been transferred to a certified institution and 13 were transferred to Rampton State Institution.

One girl was granted licence to a certified institution, but owing to her behaviour it was found necessary to return her to Warwick ; another girl was licensed to a Roman Catholic Convent in Birmingham, but was returned in 48 hours owing to her inability to adapt herself to the new surroundings and restrictions.

Owing to an alteration in the policy of classification at Warwick, 22 of the girls transferred this year from Rampton have been of a lower grade mentality. This has considerably reduced the standard of the work done by the girls.

The most productive work of the year has been gardening. Twelve to fourteen girls are regularly employed on the garden and have supplied the institution with fresh vegetables, flowers and some fruit. During the year the girls have done the laundry work of 8 outside families besides the institution washing.

The amusements include visits to the cinema, dancing, net-ball, concerts, tennis, wireless, walks, country dancing, and picnics in the summer. An additional gramophone which they are allowed to have for their special use has given great pleasure to the higher grade girls. For those of a lower grade simple games have been introduced. Outside concert parties and local orchestras have very kindly given entertainments which have been greatly appreciated by the patients. The staff and patients' Christmas concert was a great success and a performance was, by request, given outside the institution, much to the delight of the patients who were performing.

The alteration of the classification of girls in the hospital has not affected the work of the hostel. Girls are selected for admission to the hostel from the point of view of their likelihood to respond to more freedom and responsibility. After specialized domestic training in the Matron's house they are sent out to daily service from the hostel and, if their progress continues, an effort is made to find them a living-in situation on licence.

Nine girls now go out to daily work and 3 are licensed to mistresses in the town. This year 9 girls defrayed all the cost of their own holiday ; 5 went to parents and relations and the remaining 4 spent a very happy holiday at Seaford.

The general health of the staff and patients has been good ; no contagious or infectious diseases have arisen apart from mild influenzal colds.

11. CERTIFIED INSTITUTIONS.*

On the 1st January, 1932, there were 108 certified institutions with certified accommodation for 19,620 cases under the Mental Deficiency Acts.

Admissions.—The admissions during 1931 numbered 4,162, an increase of 1,309 on the number admitted during 1930. Practically the whole of the increase in the admissions, however, was due to the issue of a certificate in respect of Monyhull Colony, which had hitherto been approved under section 37. The sex distribution per cent. of the admissions was males, 50·3 ; females, 49·7. There were on the 1st January, 2,852 patients awaiting removal to institutions, an increase during the year of 193.

Discharges.—The patients discharged or transferred during the year, numbered 1,157, an increase of 25 on the number for 1931. It should be noted that most of these were transfers, or Poor Law and other cases not dealt with under the Mental Deficiency Acts, and that only a small proportion of them were absolute discharges of cases dealt with under the Acts. The discharges and transfers were about 6 per cent. of the average number of patients resident.

Deaths.—These during 1931 numbered 241, being 1·3 per cent. of the daily average number of patients resident, as compared with 1·1 per cent. for 1930. Sixty-three deaths, 26 per cent. of the total, were attributed to pneumonia, while the deaths from tuberculosis (all forms) numbered 51 (21 per cent.).

Under Care on 1st January, 1932. The changes during 1931 detailed above—admissions, discharges and deaths—resulted in a population of 19,964 in certified institutions on 1st January, 1932, an increase of 2,764 during the year. The distribution of these cases—according to the conditions under which they were received—was as follows :—

	Males.	Females.	Total.
Received under the provisions of the Mental Deficiency Acts — — — — —	8,894	9,071	17,965
Received outside the provisions of the Mental Deficiency Acts :—			
Sent by Local Education Authorities —	691	455	1,146
Sent under the Children Act, 1908 —	44	50	94
Sent by Poor Law Authorities — —	206	399	605
Sent by Relatives or others — —	29	125	154
Total — — — —	9,864	10,100	19,964

The proportion of patients in certified institutions who are received under the provisions of the Mental Deficiency Acts, as

* A Certified Institution is one certified by the Board of Control under section 36 for the reception of defectives.

compared with the proportion received outside the Acts, is steadily increasing :—

Year. (1st Jan.)	Under the provisions of the Acts.	Outside the Acts.	Total.	Percentage under the Acts.
1918	4,242	2,147	6,389	66.4
1923	7,891	2,126	10,017	78.8
1928	12,197	1,902	14,099	86.5
1931	15,457	1,743	17,200	89.9
1932	17,965	1,999	19,964	90.0

12. CERTIFIED HOUSES.*

On 1st January, 1932, there were 211 persons under care in certified houses—admitted under the following conditions :—

—	Males.	Females.	Total.
Received under the provisions of the Mental Deficiency Acts — — — — —	87	111	198
Received outside the provisions of the Mental Deficiency Acts :—			
Sent by Poor Law Authorities — —	—	11	11
Sent by Relatives or others — —	—	2	2
Total — — — —	87	124	211

The above figures show a decrease of 25 patients in these houses during the year. All cases received under the Mental Deficiency Acts (except 12 cases under Order) were “placed” under section 3.

13. APPROVED HOMES.†

Number of Patients on 1st January, 1932.

—	Males.	Females.	Total.
Sent by Poor Law Authorities —	45	60	105
Sent by Local Authorities — —	41	37	78
Sent by Relatives or others — —	212	165	377
Total — — — —	298	262	560

* A Certified House is one in which defectives are received by the owner thereof for his private profit, and in respect of which a certificate has been granted by the Board of Control under section 49.

† An Approved Home is one in which defectives are received and supported wholly or partly by voluntary contributions or for private profit, and in respect of which approval has been granted by the Board of Control under section 50.

On 1st January, 1932, there were 35 of these homes in existence, with total accommodation for 655 patients, and the numbers under care showed an increase of 24 on the preceding year.

14. DEFECTIVES UNDER GUARDIANSHIP AND IN PRIVATE CARE.

The following table shows the changes that have taken place during the past year among the mentally defective patients residing under guardianship and in private care :—

							Males.	Females.	Total
Number on 1st January, 1931—									
Under Orders	—	—	—	—	—	—	889	951	1,840
“Placed” (section 3)	—	—	—	—	—	—	19	14	33
Notified (section 51)	—	—	—	—	—	—	116	131	247
							1,024	1,096	2,120
Admissions (including cases admitted from institutional care) — — —									
Discharges (including removals to institutions under Varying Order)	—						114	94	208
Deaths	—	—	—	—	—	—	12	18	30
Number on 1st January, 1932—									
Under Orders	—	—	—	—	—	—	1,012	1,157	2,169
“Placed” (section 3)	—	—	—	—	—	—	18	12	30
Notified (section 51)	—	—	—	—	—	—	126	147	273
Total — — — — —							1,156	1,316	2,472

As compared with the previous year, there was an increase of 329 in the cases under Orders and of 26 in the “notified” cases, but a decrease of 3 in the “placed” cases, making a total net increase for the year of 352.

15. MENTAL DEFECTIVES IN PUBLIC ASSISTANCE INSTITUTIONS.*

The number of defectives dealt with under the Mental Deficiency Acts who were in Public Assistance Institutions, approved under section 37, on 1st January, 1932, is shown in the subjoined table :—

* The numbers of persons of unsound mind in Public Assistance institutions will be found on p. 48.

—				Males.	Females.	Total.
Under Orders	—	—	—	4,138	4,772	8,910
"Placed" (section 3)	—	—	—	56	61	117
Total	—	—	—	4,194	4,833	9,027

These 9,027 patients were distributed as follows :—

- (a) In Public Assistance Institutions — — — 4,986
- (b) In special Public Assistance Institutions, *i.e.*,
Seafield House and Great Barr Park — — — 570
- (c) In Special London Public Assistance Institutions—
Darenth, Caterham, Leavesden, Fountain—(formerly
the Metropolitan Asylums Board Certified Institution) 3,471

16. CENTRAL ASSOCIATION FOR MENTAL WELFARE.

The records of the Association now contain the names of nearly 42,000 defectives who have been advised and assisted. During 1931 a total number of 704 new cases were referred for help of various kinds, shewing that the case work of the Association is continuing to be of assistance to a large number who would otherwise be at a loss to know to whom to turn for assistance. The shortage of institutional accommodation has continued, but in cases where parents and relatives were able to pay moderate fees it has been possible to secure vacancies in private schools and homes. Advice regarding procedure has been given, medical examinations arranged for and the Association has been able to give material help in the finding of nurses, governesses and private attendants for defectives living in their own home.

During 1931 the travelling organizer has continued her work of developing mental welfare work in areas where previously it has not been fully organized.

Derby County Borough.—The preliminary work carried out in 1930 has been consolidated. The Mental Welfare Association was formed in May 1931 and a permanent Secretary, who had been given special training by the Central Association, appointed. Increased grants have been approved by the Borough Council and a full time occupation centre is to be opened in May 1932, under the direction of a qualified social worker who has undergone some months' training at the Central Association.

Northampton County Borough.—Work was started in March 1931, a survey made, and a report and scheme for the formation of a Mental Welfare Association was presented to the Borough Council. Consideration of the scheme coincided with the economic crisis and it has not at present been adopted by the Council.

In addition, during 1931, the Hon. Secretary and the organizer, have paid visits to Wolverhampton and Great Yarmouth, to assist the workers established there in 1930. Preliminary work has also been carried out in Nottinghamshire, where the organizer will start work, at the request of the County Council, in May 1932.

During the last two months of 1931, the services of the organizer were utilized in exploring the possibilities of extending the Central Association guardianship scheme in rural areas, particularly by placing boys on farms and small holdings.

Schemes for the development of work were submitted by the Association to Hertfordshire, Shropshire and West Ham, but have not yet been accepted.

The guardianship scheme of the Association has developed during the year, and at the time of writing this report there are 121 "active" cases on the guardianship list, i.e., 90 girls and 31 boys. The majority of the girls are placed out in domestic service, some of them earning a small wage; whilst the boys are placed either on farms or small holdings, or in a neighbourhood where it is possible for them to obtain work in factories or gardens. In cases where the defectives are not capable of doing remunerative work maintenance is paid.

As noted above, a start has been made to extend the scheme in some rural areas within easy reach of London. The services of the Association in finding suitable guardians and in paying subsequent home-visits are of value to Local Authorities all over the country, many of whom have so far made no arrangements in their own area for placing cases out under guardianship.

An agreement, dating from January 1932, has been entered into with the Middlesex County Council, for whom the Association now carries out an increasingly large amount of guardianship work.

In June 1931, a party of 37 girls was taken by three members of the Association staff for a fortnight's holiday at Seaford; individual holidays were also arranged in a number of cases. Christmas parties were arranged for groups of girls placed in and near Hitchin and in North London. The Hitchin Leisure Club, which meets every week, is a source of great enjoyment to the girls, numbering about 30, who are boarded out in the neighbourhood. The club is managed by a Local Committee containing representatives of the girls themselves. The Association has continued to organize the training of defectives living at home for the County of Middlesex, and in December 1931 a total number of 345 children were receiving training in centres or at home. About 400 visits were paid during the year, exclusive of visits from home teachers, and some 1,600 letters were written. Two hundred and nineteen children were on the registers of the centres and 126 were being taught at home by four full-time home teachers. A more detailed report of this work during 1931 is given on p. 74.

The occupational organizer has continued her work and during 1931 visited a Mental Hospital (2 visits), two Certified Institutions, a State Institution, three Public Assistance Institutions and three Approved Homes. She also lectured at the training course for supervisors and helped in the organization of the occupation centre in Great Yarmouth. The services of the organizer are

much appreciated and prove of real benefit both to the staff and patients.

A new development in 1931 was the appointment of a travelling speech trainer, who was appointed on September 1st, 1931, and whose services are at the disposal of Local Education Authorities and of schools and institutions where skilled assistance is required in the correction of speech defects. The speech trainer has already worked in Gateshead, Jarrow and Birmingham. The experience gained has proved how great is the need for a service of this kind.

Another new experiment was the appointment of a holiday home Committee to explore the possibility of establishing a permanent holiday home for defectives. In view of the general financial stringency the Committee decided to postpone for a time the question of the establishment of a permanent home. A most suitable house has, however, been rented at Littlehampton for the months of April, May, September and October 1932, as an experiment, and the response to the invitations for applications for vacancies has been most encouraging.

The training courses organized by the Association have been continued and were held during 1931 as follows :—

- (1) Medical officers' course, Part I (65 students), Part II (42 students).
- (2) Ten weeks' course for teachers (32 students).
- (3) Three weeks' course for teachers London (36 students), Birmingham (47 students).
- (4) Refresher course for teachers (22 students).
- (5) Course for enquiry officers and supervisors (23 students).

In addition individual social workers have been given training at the central office, and the students taking the London School of Economics Mental Health Course were given their practical work in mental deficiency by the Association.

Other activities of the Association continue. The quarterly journal, *Mental Welfare*, maintains its circulation amongst workers all over the world ; the library is increasingly used and tours and visits to schools and institutions have been arranged for English and foreign students.

III. GENERAL.

1. PROSECUTIONS.

Two prosecutions undertaken under our Order resulted in convictions :—

R. v. Louisa Selina Mailer.—The defendant appeared before the Justices sitting at Margate on March 16th and 23rd, 1931, in answer to certain charges preferred against her under section 315 (1) of the Lunacy Act, 1890. On one summons the Bench found an offence had been committed and a second summons was dismissed. She was fined £2 and ordered to pay £5 5s. costs, less 4s., the costs of the dismissed summons.

R. v. Albert Whale.—The defendant, a nurse at Peckham House, licensed for the reception of patients of unsound mind under the provisions of the Lunacy Act, 1890, was convicted on October 7th, 1931, at the Lambeth Police Court, of an offence under section 322 of the said Act and was fined £5 and 5 guineas costs.

Four prosecutions for offences under the Mental Deficiency Act, 1913, resulted in convictions :—

R. v. James Butler.—The defendant was charged at Barry Dock Police Court on January 26th, 1931, with knowingly inducing his son, a certified mentally defective patient on licence from Hensol Castle, a certified institution under the above-mentioned Act, to break the conditions of his licence contrary to the provisions of section 53 of the said Act. The defendant was fined £3 or in default of payment imprisonment for one month.

R. v. William Stephenson.—The defendant on May 21st, 1931, was found guilty of assisting a certified mentally defective patient on licence from Meanwood Park Colony, a certified institution under the above-mentioned Act, to break the conditions of her licence contrary to the provisions of section 53 of the said Act and was fined £10 or in default two months' imprisonment.

R. v. Jane Taylor.—The defendant was convicted at the Oldham County Borough Police Court on March 4th, 1931, under section 53 of the Mental Deficiency Act, 1913, of secreting her son, a certified mentally defective patient in Calderstones, an institution certified under the said Act, and of obstructing an officer employed by the Lancashire Mental Hospitals Board in the exercise of the powers conferred by the said Act. She was ordered to pay costs and return her son within 24 hours.

R. v. Elizabeth Foster.—The defendant pleaded guilty at the Stafford Assizes on July 1st, 1931, to a charge of obstructing Visitors under the said Act in performance of their duties, in contravention of the provisions of section 54 of the said Act, and was fined £20.

2. SUICIDES AND OTHER FATAL CASUALTIES.

Suicides.

The table given below shows the number of patients under statutory care who committed the act of self-destruction during the year under review. Particulars relating to mentally defective patients have for the first time been included here.

	The suicidal act committed :—		
	Before admission.	Whilst under care (including escapes).	Whilst on leave or trial.
<i>Certified Patients :</i>			
County and Borough Mental Hospitals	12	20	10
Registered Hospitals ...	—	1	—
Provincial Licensed Houses	—	2	—
Single-Care	—	1	—
<i>Voluntary Patients :</i>			
County and Borough Mental Hospitals	—	2	—
Registered Hospitals ...	1	3	2
Metropolitan Licensed Houses	—	2	1
Provincial Licensed Houses	1	1	—
Other Premises	—	1	—
<i>Mentally Defective Patients :</i>			
State Institutions	1	—	—
Certified Institutions ...	—	—	1
Total	15	33	14

Excluding the figures relating to the mentally defective, comparison of the figures with those of the year before show that there has been an increase this year of thirteen deaths by suicide.

The table shows that nine voluntary patients committed suicide while under care ; two more died from an act carried out before admission and three while on leave with their friends.

There were no such deaths last year, but no comparison is made with previous years because of the great addition to the number of voluntary patients since the Mental Treatment Act came into force at the beginning of the year.

The new status given under this Act to patients suffering from mental illness and the modern analytic and re-educative methods of treatment depend for their successful application on the measure of confidence existing between the patient and the doctor ; but it is one of the difficulties inherent in mental illness that the patient is apt to be reserved in extending his confidence to the person in charge of the case.

Where a mental disorder is not gross in its manifestations the friends and relatives of the patient may not appreciate the significance of remarks which to the initiated would show more clearly the trend of mind of the would-be suicide. Thus it often happens that vital information is not passed on to those to whom the patient goes for guidance and treatment.

Particular care is always necessary in the convalescent stage of either phase of the manic-depressive psychosis.

This is well known, but the need for extra precaution is emphasized by the knowledge that of the suicides amongst patients diagnosed as suffering from manic-depressive psychosis nearly half were at the time of the accident either on parole or at home on trial with their own people.

The mental states following a psychosis are so unstable that in this borderland of recovery there is, we think, a special field for research into the treatment necessary to make social readjustment possible.

In the various phases of recovery the conduct of every patient is determined as much by the social readjustments the illness has made necessary as by the illness itself and we must make every effort to obtain or to retain the entire confidence of the convalescent in order to save him from the dangers of despair.

It is satisfactory to record that in no instance did a jury lay any blame on the medical or nursing staff in charge of the patients into whose deaths they made formal enquiry.

The staff of our mental hospitals do excellent work and it is due to their skill, judgment and anticipation that the numbers of suicides and fatal casualties are so low in relation to the number of patients under care.

In the following table the suicides during 1931 are classified according to the methods adopted.

Form of Suicide.	Number.
Solid or liquid poisons and corrosive substances...	9
Poisonous gas	1
Hanging or strangulation	10
Drowning: actual and attempted	16
Firearms	1
Cut throat	8
Cut thigh	1
Burns or scalds	4
Jumping from high places	5
On railway	2
Threw himself under motor lorry	1
Lacerated throat (pushed head through window) ...	1
Lacerated throat (pushed head through door panel) ...	1
Amputation of hand (by chisel)	1
Swallowed pin	1
Total	62

Many points of interest to doctors and nurses arise in connection with the cases under review.

First in point of interest are L. M. (admitted August 5th, 1931) and F. T., (admitted January 5th, 1931), two women of mature age and both married, who, while on parole from the Cheddleton Mental Hospital, together drowned themselves in a canal. Both had been on parole for some time and neither had shown suicidal tendencies at any time while they were residing in the mental hospital. Both suffered from a phobia: the one who actually had congenital syphilis feared cancer, whereas the other who had not had syphilis concentrated on that disease.

It is quite certain that it was a double suicide because they had carefully removed their hats, spectacles, and false teeth, and placed them in the hedgeside by the towing path before they got into the canal. Their clothing was not disordered and there were no marks of violence. The water was only four feet six inches deep. Further enquiry showed that the women had been friendly and had previously walked in the grounds together.

The following case is of interest to the psychiatrist as a manifestation of a complex involving guilt and punishment.

A man, W. F. E. (admitted January 4th, 1913, to Durham Mental Hospital), came under care in 1912 when, during the period of onset of the psychosis before admission, he cut off the little toe of his left foot. Twenty years later, during the last thirteen of which he had been on parole in and beyond the hospital grounds, he died from haemorrhage as the result of a self-inflicted amputation of the left hand at the wrist. He appears to have suffered from paraphrenia.

The inordinate desire for sympathy displayed by many patients suffering from chronic encephalitis lethargica may sometimes lead them to seek spectacular means for satisfying the craving. It may happen that attempted suicide is the means adopted and those who have the keeping of such cases should note that four committed suicide during the year, two by throwing themselves under a train, one by setting fire to herself and one by cutting his throat with the edges of glass broken by pushing his head through a window.

The ingenuity of the determined suicide is well exemplified by the case of E. W. (Claybury Mental Hospital, admitted June 9th, 1931), suffering from melancholia, who secured a rubber tyre from the wheel of an invalid chair, passed the tyre over a hook and around her throat and then turned round and round until the tyre caused stangulation. Though she was found immediately, and artificial respiration produced partial recovery, she died a few hours later.

A somewhat unusual death was that of P. P. B. (Fiddington House, admitted November 24th, 1931) who died from delayed phosphorus poisoning. She had taken half a tin of rat poison two

days before, and died three days after, admission to the house. Death occurred quite suddenly and without immediate symptoms.

There are three cases of particular interest to nurses.

A patient, E. D. (Bucks Mental Hospital, admitted August 15th, 1929), who had attempted self-strangulation, was brought under treatment after respiration had stopped. But by the persistent efforts of the staff in carrying on artificial respiration and other treatment for two hours, respiration was finally re-established.

Another patient (M. E. J., admitted to Northwoods House 10th July, 1929), not known to be suicidal, jumped into a hot bath while it was being prepared by the nurse and sustained scalds from the effects of which she died. The nurse's attention had been diverted for a moment by the violent resistiveness of another patient in the bath-room.

The third case was a woman (R. E. B., Glamorgan Mental Hospital, admitted 21st March, 1929) who set fire to herself when the night nurse, in the process of trimming the fire, left the room to bring in coal. The opening in the fire guard had been left unlocked.

Fatal Casualties.

Among the deaths from misadventure reported to our Board, are several that call for comment.

In the case of C. R. R. K., a male patient at Rubery Hill Mental Hospital (admitted July 15th, 1926), who died two hours after a struggle with a male nurse, it was found at the post-mortem examination that he had fractures of six ribs on the left side and four on the right side of the chest. There was evidence to suggest that the patient had suffered from general paralysis.

Two members of the Board held an enquiry at the hospital. They were very favourably impressed with the manner in which the nurses gave evidence. They considered that during his residence at the hospital the patient received skilled treatment, that all that could be was done for him after the occurrence, and they stated without hesitation that in their opinion the male nurses implicated were in no way to blame.

The circumstances attending the death of G. A. W., a patient at Laverstock House (admitted December 14th, 1930), were unusual. During a period of excitement associated with hallucinations, and immediately after a nurse had left the room, he charged the door with his head, in this way sustaining a fracture of the skull. He died some hours later from concussion and from extra-cerebral haemorrhage caused by the injury.

An important point in the nursing of patients of very low intelligence is illustrated by the death of C. P. C. (admitted October 1st, 1929), an epileptic idiot girl aged 17, who was in the care of a guardian in a private home. The guardian put the child to bed and arranged for her a hot water bottle under the lower sheet. She saw that the child was uncomfortable and, thinking

it was due to indigestion, was not unduly disturbed ; an hour later, however, she found the child suffering from burns in the second degree on both buttocks. The condition was treated but the child died a week later from supervening pneumonia.

3. RESEARCH.

In Part II of our Report is included a Supplement containing contributions received regarding clinical, pathological and other research, as well as routine laboratory work, carried out during 1931 in, or in connection with, the institutions we visit. Mention is also made of papers communicated at medical meetings, and to journals by members of the staffs of these institutions.

These communications have been received from 49 of the 98 County and Borough Mental Hospitals, from four of the 13 Registered Hospitals, and from seven Institutions for Mental Defectives.

The number of public mental hospitals which have furnished us with contributions is 18 more than for the previous year—a notable and gratifying increase which brings the time, we hope, sensibly nearer when each of these institutions will contribute yearly to the Supplement.

The need for drastic economy has imposed considerable restrictions on our space this year, and we have been reluctantly constrained to omit several of the papers and other matter sent to us from the Birmingham Joint Board of Research (City Mental Hospital and University). Having explained the position to the writers of the papers in question*, we decided upon this omission as the most suitable means of ensuring space for the publication in full of Dr. Graves's paper, "Nasopharyngeal Sepsis in a Thousand-and-One Cases of Mental Disorder," and of a portion of his important communication upon "Non-Specific Therapy in the treatment of Mental Disorder arising from Chronic Infective Processes" and of the descriptions of thirty-eight cases. We trust that the omissions we have been compelled to make will not unduly impair the reproduction of what is obviously a paper of great significance. We are glad to know that a considerable

* The omitted material comprises:—Report by the Visiting Ophthalmologist, Mr. E. B. Alabaster, M.R.C.S., D.O., the interesting and suggestive work embodied in which we hope will be continued and extended to further cases (those reported on were 219), and forwarded to us for publication next year ; two communications by Dr. W. H. Shilvock, B.Sc., "Wassermann Reaction in the Blood and Cerebrospinal Fluid in 210 cases," and "Intramuscular Colloidal Sulphur (Aqueous) Therapy," "An unusual Case of Intracranial Birth Injury" by Dr. J. M. Mackenzie, "Two Temporary Patients" by Dr. Kathleen A. H. Sykes, D.P.M., the annual Laboratory Report (General, Bacteriological, Histological, and Chemical), by Dr. F. A. Pickworth, B.Sc., and the Introductory portion to "Non-Specific Therapy in the Treatment of Mental Disorder arising from Chronic Infective Processes" by Dr. T. C. Graves, B.Sc., F.R.C.S., together with the descriptions of 17 of the 38 cases illustrating the relationship of the mental disorder to the infective process and its treatment.

portion, if not all, of the parts omitted will be covered by their inclusion in a forthcoming number of the *Journal of Mental Science*, which, we understand, will be devoted largely to this topic.

Routine Laboratory Work.—Summaries of work of this kind were sent from 41 of the reporting institutions, of which four were for mental defectives and two were registered hospitals. This number is more than double that for the previous year. Admitting that such returns are of secondary importance to communications embodying research, we are still of opinion that, when numerically they are sufficiently representative, their collation will be of interest and of service, and we look forward to being able to take steps in that direction. In nine instances the report was limited to work of this nature ; but some of these institutions on previous occasions have sent us accounts of work of distinctly research standard ; and, as regard the others, we are aware that, from an initial effort of this kind, there has often grown the habit of making yearly contributions describing work of great interest.

Several of the mental hospital laboratories continue either to be recognized as the county laboratory or to undertake work for the Public Health Authority : notably Hellingly, Herts, and Parkside. At some of them, analyses of milk and of the water supplies are conducted. In the report from Park Prewett is a reference to the incidence of *undulant fever*.

Chronic Infective Processes (Septic Foci, etc.).—In association with and as a possible cause of mental disorder, increasing attention is being given to this subject. The City of Birmingham Mental Hospital continues to be the chief exponent in this country of treatment directed on these lines ; and an important communication has come from that hospital. Specific allusions appear in the reports from St. Andrews Hospital (Northampton) and Cardiff to the toxic action of chronic infections. It is not, however, so much from the titles of the communications which we have received this year as from a perusal of their contents that the fact of this increased attention may be elicited. That one or more of these conditions may be the cause of mental disorder, probably no one would deny. Their very nature, however, and the chain of events which is believed to constitute their role, make doubt almost inevitable (at this stage of such investigations) as to the extent and frequency with which these conditions exert their influence.

In the St. Andrew's report, the incidence of septic conditions in the ear, nose and throat is discussed at some length, and statistics embracing observations of the past four and a-half years are included. Elsewhere in it, and in relation to the need felt for more specific methods of treatment, the remark is made that from observations arising out of "an intricate biochemical, immunological and toxological problem such as the majority of mental patients appear to present," it would seem only logical to seek for

some specific method, not only of relieving the whole economy of this continued toxic action of chronic infections, but also of stimulating leucogenic activity to a point where repair can begin and be maintained : further, that, with the aid of team work, endeavour should be made to find measures for freeing toxin already fixed in the central nervous system and for preventing further chemical fixation.

The report from Birmingham gives an explanation of the purpose of the eight groups into which 38 illustrative cases are divided, and of the order in which these groups are placed ; in the Supplement we have reproduced particulars of 21 of these cases. Dr. Graves's report contains an interesting account of the manner in which the non-specific therapy (in its three grades of potency) and surgical treatment of the foci, whether or not in conjunction with each other and in differing orders of precedence, are believed to act.

In the report from Cardiff, in relation to septic conditions in the ear, nose or throat, it is stated that the routine examination of all newly-admitted patients (280 in 1931) for evidence of such conditions has continued to be performed in accordance with the research which was started in the previous year. Nineteen cases were submitted to operation ; of these, 14 were for nasal sinus investigation ; and of these, four revealed evidence of sinus infection. Suitability for sinus investigation was gathered from any suggestion, as revealed by the routine examination, of sinus involvement or in which the mental picture was suggestive of a toxic causal factor.

How far such three statements (St. Andrew's, Birmingham, and Cardiff) are contradictory or complementary it is not our function to determine. The importance of the matter is manifest in relation to so baffling a subject as the study and treatment of mental illness has so often proved to be. Whatever be the relationship between chronic infective processes and mental disorder, the detection of these processes and the removal of septic foci must be to the advantage of the person's bodily economy. Of the practical value of even so restricted a view of this removal, an instance can be found in the application of these methods to cases of general paralysis, with the object of preparing the individual to respond more safely and effectively to induced malaria*. We again express the hope that every encouragement will be given to this line of study and treatment, and that those who pursue it will communicate their results in case-form as well as summarized. To those who report that search for evidence of sinusitis or other foci of chronic infection has failed to reveal it as a relatively common condition, we venture to make the request that they will make quite sure that they are using the precise technique employed by

* As may be observed from " Nasopharyngeal Sepsis in a Thousand-and-One Cases of Mental Disorder " in the Supplement, 25 of these 1,001 cases were cases of general paralysis.

those who report positive results and, if they do not use this technique, to make that fact clear. So far as we are in a position to form an opinion upon such points, the remark that "an activating agent is essential in some and, generally, is desirable in most cases," seems to us to possess a double importance ; because, while this need or desirability refers to efficacy in treatment, the use of an activating agent seems frequently to be of material diagnostic importance.

Biochemical.—A considerable number of the communications are of this nature. Among them are the accounts of several studies in blood sugar. Those in progress at Cardiff are in order to determine how far patients who give a hyperglycaemic index (that is, who show a definitely disordered carbohydrate metabolism) vary in response to the administration of various internal secretions—insulin being the hormone at present under investigation. There are others in relation to blood sugar from Dorset, Gloucester, Notts City and Whittingham, and one from Menston in relation to carbohydrate tests of hepatic efficiency.

Calcium and phosphatic metabolism of all cases on admission, throughout their treatment, and on recovery or transfer, is the subject of an investigation at St. Andrew's ; likewise of one at Wadsley. An enquiry at Cardiff into Nitrogen metabolism in 40 psychotics seems so far to suggest a cleavage between depressed patients on the one hand and cases of dementia praecox and stupor on the other hand. The relationship between blood cholesterol and mental states is the subject of an interesting communication from Severalls, and of some further observations from Stafford.

From Cardiff, work is reported upon the action of dyestuffs on catalytic activities of tissues, which led to the investigation of the action of Drugs on Enzymes : work which, it is believed, may indicate a new method of chemotherapy. From the same hospital an investigation, "Narcosis and Oxidations," into the oxidations brought about by the brain and the effect upon them of narcotics is still in progress. Some highly interesting results have emerged. Besides being of great importance in connection with the problems of biological oxidations in relation to the physiological activity of the brain, the work seems likely to have some significant bearings on the use of narcotics in the treatment of cases of mental disorder.

Dysentery, Enteric, etc.—These disorders form the subject of twelve communications : of these, four referred only to dysentery, three only to typhoid, and five to both these diseases. The one from Wakefield includes the Thirteenth Post-War Report on Asylum Dysentery and allied Infections, by Professor Shaw Bolton and his colleagues. As usual, much painstaking work is revealed by these communications : work that has a most important influence upon the health of the persons resident in the institutions concerned. In the report from Wakefield is a noteworthy lesson as to the value of prophylactic inoculation.

Scarlet Fever.—In the report from Caterham, it is satisfactory to note how, by the employment of such methods as “Dick testing and inoculation,” much dislocation of administration and interference with the amusement of the patients have been avoided.

General Paralysis.—That there is no slackening in the interest taken in this disease is evinced by the fact that some 25 communications in relation to it have been forwarded from 20 of the 60 reporting institutions. Practically the whole of these communications deal with treatment in one form or another: in 16 instances by induced malaria, in six by sulphosin; but, apart from these special communications, returns made to our office show that there were 72 institutions at which, during 1931, induced malaria was employed and 20 at which various forms of sulphur therapy were tried. After-history of malarially-treated cases is the subject of reports from Parkside and Whittingham; and, from Winwick, is an interesting report upon the Serologic results in malarially-treated general paralysis, the charts in illustration of which, we regret, we are unable to publish. From the communication from the last-named hospital, there can be gathered the fact that, of 21 general paralytics admitted, only 12 were regarded as not too advanced for malarial treatment: under any circumstances this is a regrettable statement to make, but it is doubly so when the delay in their reception is in part due to the shortage of beds, as seems to have been the case here.

Treatment by Induced Pyrexia.—Much attention is being given to this subject, not only in relation to general paralysis and dementia praecox, but in other forms and phases of mental disorder. The idea of its utility as a line of non-specific stimulative therapy is by no means new, but some of the modes of obtaining the pyrexia are new—for example, the trial of diathermy at Rainhill—and here and there serious consideration is being given to ascertain how far it is the pyrexia or the nature of the provocative agent, or both in conjunction, that is responsible for the beneficial results. We have always doubted the claim, not infrequently assumed without inquiry, for the pyrexia itself. By way of caution against a too-ready acceptance of such a claim, attention may be drawn to the remarks in the St. Andrew's report, to the thoughtful paragraph devoted to the matter in the communication from Birmingham, and to the remarks from Cardiff in relation to pyrexial treatment, by sulphur injections, of 69 patients, mostly schizophrenics of long standing and cases of melancholia with chronicity. Those remarks, while not denying biochemical or other metabolic changes, expressed belief that the effect is largely psychological. Although, here again, some scepticism is permissible in so simple an explanation, it cannot be doubted that their corollary is on right lines—namely, the importance of making use of the interruption in phantasy life in order to employ and to push occupational therapy.

Prognosis.—As a subject for investigation, the prognosis of mental illness is well worth more attention than it commonly receives. Not only is it a matter upon which it is often of great service to be able to speak with as much certainty as the facts warrant, but studies of prognostic data and the attempt to assess their value cannot fail in their turn to augment our knowledge as to the nature of the different forms of mental disorder. Besides some observations in this direction in several of the communications (for example, Wonford House, Exeter), there is from West Park an interesting survey of the prognostic factors in the treatment of general paralysis.

Examination of the Blood and Serum in the diagnosis of Syphilis.—The practical importance of these procedures is great, and the ten communications which relate to them are all of value in assisting to determine the accuracy and availability of a number of tests. From Winwick is an interesting report in considerable detail upon the Meinicke (M.K.R.) reaction in the sero-diagnosis of syphilis; and, from Whittingham, a modification of this test. From a perusal of these communications and from other facts within our knowledge, it would seem, with even more certainty than last year, that a negative result as regards the blood must not be held to render examination of the cerebro-spinal fluid unnecessary. In this relation, mention may be made of the report from Whittingham upon the “Value of routine examination of the Cerebro-spinal Fluid.”

Encephalitis (lethargica, epidemic, acute and chronic).—In relation to its chronic epidemic form, there is a report from Professor A. J. Hall (Wadsley), with special reference to the so-called oculo-gyric attacks. From Derby Borough is a communication upon post-encephalitic conditions; and from West Park is one in relation to Parkinsonism.

Dementia Praecox.—Some ten communications relate to this condition. Among them are: one (from Long Grove) concerned with the effect of stimulation by carbon dioxide; two (from Ewell and Colney Hatch) recording work commenced upon the histology of the digestive tract, one from Storthes Hall upon the endocrine function in these cases, and three from Rainhill, of which one describes efforts at treatment by diathermy, another records measurements by the use of X-rays of the heart and aorta in relation to alleged infantilism of the cardiovascular system in dementia praecox, whilst the third is an account setting out the results of a histological study of a series of cases in the acute or malignant form of the disorder: the conclusions arrived at are that there is no characteristic histopathology of the brain in dementia praecox, that fibrosis of the solid viscera is the most constant feature, that the kidney (firstly) and the spleen (secondly) bear the brunt of this fibrosis, and that the other organs, while affected to a lesser extent, usually manifest a definite order of

involvement. We regret our inability to reproduce the photomicrographs with which this interesting paper is illustrated.

Ductless Glands.—The pituitary, normal and abnormal, and some hitherto undescribed vascular conditions, is one of the subjects in the report from Rainhill. From Storthes Hall is a communication upon the endocrine function in dementia praecox. Several other papers—for example, the histological study from Rainhill, one in relation to cholesterol from Severalls, and one from the Fountain Hospital—are of this nature. In considering the work done in this direction, over which manifestly a great deal of time often has been spent, and bearing in mind the functional relationship which exists between the several ductless glands, we are disposed to think that still further value for this expenditure of time and labour probably might be obtained were the work wider, and less apt to be concentrated upon one of these organs at a time.

Epilepsy.—In the St. Andrew's report, there are interesting observations in relation to the treatment of epilepsy. From Whittingham is a note as to the application of Ketogenic diet to these conditions. At Notts City and Gloucester, investigation has been made into the glucose tolerance; and at Colney Hatch observations upon the blood pressure have been correlated with haemoglobin readings. Epilepsy is a condition—or, as it would be more accurate to say, a collection of conditions—into which, as on several previous occasions we have urged, it is much to be desired that more systematic and organized research should be made. Perhaps the solution of their riddle will come from investigations less directly concerned. Meanwhile it remains unsolved; and, in the absence of more organized inquiry, such communications as those mentioned above are all the more welcome.

Neurological conditions.—From Prudhoe Colony is a communication upon nystagmus with a suggestion that the miners' form is found more often among those "who are on the borderland of mental deficiency." From the Royal Eastern Counties Institution (Colchester) are remarks upon cerebral diplegia directed to its better classification and treatment. From Leavesden are four accounts—one upon the syndrome of infantile hemiplegia, facial naevus and mental defect, another describing arterial and venous angioma of the brain, one upon adiposo-genital dystrophy, and an attempt to formulate an alternative hypothesis to the "Path" theory of neural function. From Derby Borough are notes upon frontal glioma and symmetrical bilateral calcification of the brain; and from Cane Hill upon the pathogenesis of the Argyll-Robertson pupil.

Mental Deficiency.—Some account is given in the communication from the Royal Eastern Counties Institution (Colchester) of the Research Department instituted there last year and of the field

for the investigation into the causes of mental deficiency ; also of the work being done in relation to the position of mental defectives in the family. In the same report, and in reference to family histories of mental defectives, allusion is made to the criteria of good quality of evidence and to the difficulty of living up to it. Again in the same report, advantage is claimed for a study of Mongolian imbecility as being a clear-cut group which is comparatively easy to distinguish ; a further reference to this group is made in the communication from Leavesden under the condition known as adiposo-genital dystrophy. Mental tests is the subject of a communication from Caterham. The report from Stoke Park contains the interesting remark that, in relation to the mental and physical examination of the cases now under investigation, " The general trend of the investigation seems to indicate that mental deficiency is not a disease or complex of diseases, but is an under-development, not only of the brain, but of the nervous system generally, as well as of the somatic and physical systems." In conjunction with this tentative conclusion fitting mention perhaps may be made of the communication from Rainhill upon infantilism in dementia praecox. Some of the topics mentioned under neurological conditions are related not less closely to mental deficiency.

Hydrotherapy, Colonic irrigation, Electrotherapy, Diathermy, and Actinotherapy.—Apart from references to these and other modes of treatment in the course of case-descriptions and other communications, observations in seven of the latter can be found with direct reference to the applicability or mode of action of one or other of these methods.

Clinical Accounts of Cases.—Those to which reference has not been made already under other heads comprize pellagra (Bristol), pseudo-mirror writing (Devon), pancreatic carcinoma (Winwick), Pick's disease (circumscribed senile atrophy), Alzheimer's disease, argyria, bacillus pyocyaneus septicaemia (all four from Wadsley), dementia praecox, two cases of (Barnwood House).

Experimental Psychology is a department of work in relation to which we wish we might receive more frequent communications than heretofore. In the one that is to hand from Horton, some account is given of work which, instituted at University College, has been developed at the mental hospital since February, 1930, and which has as its object the development of an applied experimental psychology in the field of psychiatry. In the course of the report, hope is expressed that " this work will add materially to psychiatric knowledge, first with benefit to psychiatric teaching, and ultimately to assistance in the diagnosis, prognosis, and general clinical recording of mental patients."

In the communication from Cardiff is a report of work upon the relationship between emotional tension, as given by the psycho-

galvanic index and the hyperglycaemic index, by taking advantage of the inevitability of the response as objective evidence of affectivity. It would seem that a definite parallelism exists in psychotics between the emotional state as thus measured and the hyperglycaemic index—the variations in the latter and in the response depending, it is found, not on the type of psychosis but upon the degree of emotion tension present at the time of the test.

We regard such work as of great importance. It is a step towards filling a gap ; and, if such work could be extended and systematized, and prosecuted in several centres for the advantages of comparison, something would be accomplished towards establishing a body of data which would serve as a basis on which to build a more scientific system of psychological medicine.

By Order of the Board,

(Signed) L. G. BROCK,
Chairman.

(Signed) P. BARTER,
Secretary.

10th June, 1932.

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Appendix D.—List of Hospitals approved for the reception of Voluntary and Temporary Patients.

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Appendix F.—List of Institutions for the Mentally Defective.

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THE

EIGHTEENTH ANNUAL REPORT

OF

THE BOARD OF CONTROL

FOR THE YEAR 1931

PART II

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THE EIGHTEENTH ANNUAL REPORT
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PART II

SUPPLEMENT TO REPORT.

SCIENTIFIC RESEARCH WORK IN 1931.

I.—*Birmingham Joint Board of Research (City and University).*

By Dr. T. C. GRAVES, F.R.C.S., Chief Medical Officer,
Birmingham City Mental Hospitals Committee.

A. Nasopharyngeal Sepsis in a Thousand-and-One
Cases of Mental Disorder. P. 10.

B. Non-Specific Therapy in the Treatment of
Mental Disorder arising from Chronic
Infective Processes. P. 17.

II.—*From the Cardiff City Mental Hospital.*

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I.—THE JOINT BOARD OF RESEARCH FOR MENTAL DISEASES (CITY AND
UNIVERSITY OF BIRMINGHAM).

A.—*Nasopharyngeal Sepsis in a Thousand and One Cases of Mental
Disorder.*—By Dr. T. C. GRAVES, F.R.C.S., Chief Medical Officer,
Birmingham City Mental Hospitals Committee.

The records have been examined of 1,001 cases of Mental Disorder
which have been investigated and treated by Mr. W. Stirk Adams, F.R.C.S.,
for nasopharyngeal sepsis in the mental hospital during the last five years,
1927 to 1931 inclusive.

Status of Admission for Mental Disorder.

All these cases were undoubtedly affected with mental disorder, for,
except for seven voluntary patients, four males and three females,

admitted during 1931, all the patients included in the Series under review had been admitted to the mental hospital under the medical certificate and reception order prescribed by the Lunacy Act of 1890.

Forms of Mental Disorder.

The cases investigated represented all the forms of mental disorder generally recognized. Whilst attention has been principally directed to the so-called Functional types of mental disorder, yet consideration was also given to cases where nasopharyngeal sepsis was found to be present in patients with general paralysis, epileptic psychosis, imbecility (with and without epilepsy) certified under M.D. Act, and some cases of post encephalitis lethargica.

The figures of the number of cases in these groups treated are given in the following tables :—

Duration of Mental Disorder.

It has been found possible, whilst examining the records, to separate out from the large Functional group a small group of cases occurring in patients who had been admitted under reception order during the years prior to 1923 and had not been discharged in the interval. The remainder of the Functional group, and the majority of the cases treated, were those who had been admitted to this mental hospital since 1922, predominantly as direct admissions. In a few of these cases it has occurred that patients have been investigated and treated for nasopharyngeal sepsis who had had an attack of mental disorder and been discharged before 1923, but have subsequently been admitted with another attack and have then been investigated and included for record purposes in this the larger group.

Conditions Limiting the Applicability of Investigation and Treatment.

On the whole these patients have not been easy to examine or simple to treat. Generally there has been in evidence a complete absence of voluntary co-operation, and frequently there has been displayed that intense resistiveness to investigation and treatment which is characteristic of advanced mental disorder. Perusal of the description of cases will show that on some occasions even ordinary clinical examination as well as special investigation and treatment have had to be carried out under general anaesthesia. The necessity for resort to such a procedure has not been allowed to be a hindrance to treatment, but it has meant that the first and foremost limitation to the applicability of investigation and treatment has been the capacity of the patient to tolerate general anaesthesia.

Principally the incapacity for such toleration has resulted from the cause also responsible for the mental disorder. The cardiovascular instability which has increased the risk of the administration of the general anaesthesia has resulted from the very sepsis it is desired to treat.

In most cases, therefore, before an attempt could be made to remove the major sources of intoxication, endeavours have had to be made to mitigate or to remove smaller sources in order that the intoxicated cardiovascular system might possibly improve sufficiently to permit of the risk of general anaesthesia.

In many cases examined clinically, however, widespread degenerative changes have been observed (in several cases confirmed at autopsy) associated with nasopharyngeal sepsis. In such cases it has been manifestly undesirable to proceed further with surgical investigation.

Where these degenerative changes have been less severe and where the risk of general anaesthesia has appeared to be less pronounced, every effort has been made to give the patient the benefit of the treatment.

The following table giving the ages of those treated should suggest such a deduction.

Sex and Age Distribution.

The Sex distribution was 499 males and 502 females. The ages of the patients varied from ten to seventy-one years as shown by the following table :—

Age.	Male.	Female.	Total.
10, 13 and 14 years ...	3	—	3
15—20 years	47	32	79
21—25 „	80	49	129
26—30 „	92	94	186
31—35 „	64	76	140
36—40 „	52	81	133
41—45 „	45	61	106
46—50 „	43	50	93
51—55 „	35	37	72
56—60 „	20	15	35
61—65 „	13	6	19
66—70 „	4	1	5
71 „	1	—	1
TOTALS	499	502	1,001

Incidence of Distribution and Locality of Disease.

Tonsil Disease.—Of these 1,001 cases, on clinical examination, 41 males and 80 females, a total of 121, were found to have only diseased tonsils, associated in a few cases with adenoids of varying size.

These diseased tonsils, in these cases as well as in those other cases where there was associated sinus disease, were removed by dissection.

The relation of tonsil disease alone to the grouping of Mental Disorder already indicated is given in the following table :—

Total Number of Cases.				Diseased Tonsils only.		
M.	F.	T.		M.	F.	T.
19	6	25	General paralysis	1	2	3
24	22	46	Epileptic psychosis	1	1	2
4	14	18	Imbecility	1	1	2
7	4	11	Post encephalitis	1	1	2
20	23	43	Functional psychoses—			
			Before 1923	1	3	4
425	433	858	After 1922	36	72	108
499	502	1,001		41	80	121

Sinus Disease and Tonsil Disease.—The remaining cases, 458 males and 422 females, a total of 880, on clinical examination presented conditions which required investigation by the Watson-Williams technique for nasal sinusitis.

Of these, the application of that technique to the investigation enabled three groups of cases to be differentiated.

(a) *No Evidence of Sinusitis and Tonsils Healthy.*—In 62 cases, 46 males and 16 females, there was no *macroscopic* evidence of sinusitis and

the tonsils were considered healthy. The incidence of this finding in the different groups was as shown below :—

Total Number of Cases.				No Sinus or Tonsillar Disease.		
M.	F.	T.		M.	F.	T.
19	6	25	General paralysis	7	0	7
24	22	46	Epileptic psychosis	7	0	7
4	14	18	Imbecility	1	1	2
7	4	11	Post encephalitis	0	0	0
20	23	43	Functional psychoses—			
425	433	858	Before 1923	2	2	4
			After 1922	29	13	42
499	502	1,001		46	16	62

(b) *Sinus Disease present with Tonsil Disease.*—In 418 cases, 198 males and 220 females, there was macroscopic and other evidence of sinus disease associated in these cases with diseased tonsils.

The occurrence of these findings in the various groups was as follows :—

Total Number of Cases.				Sinus Disease with Tonsil Disease.		
M.	F.	T.		M.	F.	T.
19	6	25	General paralysis	1	1	2
24	22	46	Epileptic psychosis	6	9	15
4	14	18	Imbecility	0	6	6
7	4	11	Post encephalitis	4	0	4
20	23	43	Functional psychoses—			
425	433	858	Before 1923	9	11	20
			After 1922	178	193	371
499	502	1,001		198	220	418

(c) *Sinus Disease without Tonsillar Disease.*—In 400 cases, 214 males and 186 females, sinusitis was present, but without associated tonsillar disease. In some of these cases the tonsils had previously been removed. In other cases, the majority, they were considered to be healthy.

The incidence of these findings in relation to the groups is shown.

Total Number of Cases.				Sinus Disease without Tonsillar Disease.		
M.	F.	T.		M.	F.	T.
19	6	25	General paralysis	10	3	13
24	22	46	Epileptic psychosis	10	12	22
4	14	18	Imbecility	2	6	8
7	4	11	Post encephalitis	2	3	5
20	23	43	Functional psychoses—			
425	433	858	Before 1923	8	7	15
			After 1922	182	155	337
499	502	1,001		214	186	400

The Distribution of the Sinus Disease.

The distribution of the sinusitis, whether associated or not with tonsillar disease, in the 818 total cases, 412 males and 406 females was as follows :—

Total Number of Cases.														
M.	F.	T.	Antra alone or with others.			Ethmoids or with others.			Sphenoids or with others.					
			M.	F.	T.	M.	F.	T.	M.	F.	T.			
19	6	25	10	4	14	7	1	8	5	1	6			
24	22	46	15	17	32	10	11	21	5	8	13			
4	14	18	1	11	12	1	6	7	1	5	6			
7	4	11	5	2	7	6	1	7	4	1	5			
20	23	43	14	13	27	9	10	19	10	7	17			
425	433	858	270	269	539	178	184	362	129	128	257			
499	502	1,001	315	316	631	211	213	424	154	150	304			

The Number of Sinuses Involved in Disease.

The number of diseased sinuses found in these cases, 412 males and 406 females, total 818 patients, is set out in the following table in relation to the several groups, the numbers of cases examined in each group have already been given previously :—

		One Sinus.		Two Sinuses.		Three Sinuses.		Four Sinuses.		Five Sinuses.		Six Sinuses.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
General paralysis	...	2	3	3	0	1	0	3	0	1	1	1	0
Epileptic psychosis	...	3	3	4	10	4	3	3	4	1	1	1	0
Imbecility	...	0	3	1	3	0	3	0	1	0	1	1	0
Post encephalitis	...	0	2	0	0	1	0	3	1	2	0	0	0
Functional psychoses—													
Before 1923	...	2	6	5	3	3	4	1	2	2	4	4	1
After 1922	...	90	98	95	96	52	59	73	41	20	30	30	29
Totals	...	97	115	108	112	61	69	83	49	26	31	37	30
		212		220		130		132		57		67	

Deaths.

During the five years of the period of investigation of these 1,001 cases, and whilst they were resident in the hospital, there occurred amongst them a total of 28 deaths, males 13 and females 15.

This mortality in relation to the several groups was as follows :—

Total Number of Cases.				Deaths.		
M.	F.	T.		M.	F.	T.
19	6	25	General paralysis	2	0	2
24	22	46	Epileptic psychosis	2	2	4
4	14	18	Imbecility	1	1	2
7	4	11	Post encephalitis	0	1	1
20	23	43	Functional psychoses—			
			Before 1923	0	0	0
425	433	858	After 1922	8	11	19
499	502	1,001		13	15	28

This death incidence does not suggest that the operative treatment has been dangerous to life for in only one case has death been attributable to operative interference, otherwise these deaths have all occurred at a period remote from surgical intervention.

Transfers.

Twenty-four patients, 19 males and 5 females, were, during the period of residence, following investigation and active treatment, found to be chargeable elsewhere, and were transferred to the care of other mental hospitals before mental recovery had ensued following treatment of the nasopharyngeal sepsis.

The relation of these transferred cases to those of the groups is as follows :—

Total Number of Cases.				Transferred.		
M.	F.	T.		M.	F.	T.
19	6	25	General paralysis	0	0	0
24	22	46	Epileptic psychosis	0	1	1
4	14	18	Imbecility	0	1	1
7	4	11	Post encephalitis	0	0	0
20	23	43	Functional psychoses—			
			Prior to 1923	0	0	0
425	433	858	Subsequent to 1922	19	3	22
499	502	1,001		19	5	24

Duration of the Nasopharyngeal Sepsis.

It will be seen from the histories of the cases which have been described that there is a large proportion in which it has been possible to trace the existence of nasopharyngeal sepsis over a long period of time, often there is a definite history of its treatment before admission and not infrequently its origin has been traced back to childhood. Later, mental disorder has appeared and, as has already been indicated, frequently associated with cardiovascular and other systemic disturbances.

In many of the cases under review the mental disorder had been in existence for a considerable period before this investigation and treatment was applied.

These cases, therefore, cannot be regarded as cases of mental disorder of recent origin and mild symptomatology nor as specially selected to give favourable results because the nasopharyngeal disease is of recent origin.

The grounds of selection of these cases have been the lack of favourable response to other forms of treatment of the mental disorder, prior or subsequent to admission to mental hospital, the presence or suspected presence of nasopharyngeal sepsis and a circulatory state—frequently very unstable—sufficiently stable to permit of general anaesthesia.

Results of Treatment.

In the majority of these cases investigated and treated for nasopharyngeal sepsis there has been observed an improvement in the physical and mental states.

The extent of that improvement has been a variable quantity, and for purposes of estimation three groups can be devised.

(1) Discharged to home care and able to work at home or in situations and take part in social life under normal conditions. (2) Not discharged to home care but showing amelioration of the mental and/or physical symptoms. (3) Not improved.

The time relations of results of treatment in these cases have also been variable, and they may be classified as follows :—

(a) Immediate improvement. This appears within a month. (b) Retarded improvement. Gradual improvement within six months. (c) Delayed improvement. After six months.

(1) *Discharged*.—Out of the total of 1,001 cases, 218 males and 267 females, a total of 485 patients, were discharged from the books of the hospital during the period of this investigation following treatment of the nasopharyngeal sepsis.

Total Number of Cases.				Total Number Discharged.		
M.	F.	T.		M.	F.	T.
19	6	25	General paralysis	5	4	9
24	22	46	Epileptic psychosis	7	4	11
4	14	18	Imbecility	0	8	8
7	4	11	Post encephalitis	1	1	2
			Functional psychoses—			
20	23	43	Before 1923	4	3	7
425	433	858	After 1922	201	247	448
499	502	1,001		218	267	485

The great majority of those discharged were received into their own homes, especially did this apply to the general paralytics, post encephalitics and functional groups, also some of the epileptics. The imbeciles were principally discharged to mental deficiency colony care.

It is, however, principally in relation to the functional cases that interest lies, and especially to the larger group, viz., those admitted after 1922.

That even some of the cases admitted before 1923 should have responded to treatment is interesting, in that it demonstrates the value of the treatment.

The figures of this report were made up early in 1932, and there are undoubtedly some cases treated in 1931 whose results of treatment had yet to appear, but, without making any allowance for those the following percentages can be given of the cases of the after 1922 functional group.

Total Cases.			After 1922.	Discharged.		
M.	F.	T.		M.	F.	T.
425	433	858		201	247	448
19	3	22		—	—	—
406	430	836	Functional group Deduct transfers	201	247	448

Percentage of Discharged to Total Cases.—Males 201 to 406 (50 per cent.); Females 247 to 430 (57·4 per cent.); Total 448 to 836 (53·5 per cent.).

(2) *Not Discharged but Ameliorated.*—In these cases the criterion of discharge and ability to carry on domestic life cannot be applied and therefore recourse can only be had to a descriptive indication of amelioration.

Improvement may be manifested in one or more symptoms or conditions mental or physical, although not in all.

In other cases there has been a reduction in the intensity of symptoms or of their periodicity criteria.

Objectively conduct has been improved but not sufficiently to warrant discharge.

When consideration is given, even if only to the many sensory disturbances* which may be due to nasopharyngeal sepsis, it is possible to appreciate that, whilst total recovery from all the component symptoms of mental disorder may be impossible, yet considerable amelioration of suffering may follow treatment of that sepsis.

It has been considered that, of the 1,001 cases treated, up to 300 cases have received some benefit of varying degree from the treatment, although they have not been discharged.

(3) *Not Improved.*—In this group are the remainder, but it is possible to say in some of these cases that, whilst they are no better, they have not become worse. Exacerbation of symptoms has not followed interference. When such exacerbation does occur, it suggests inadequate preparation, investigation and treatment, and above all the absence of provision for effective drainage of foci.

B.—*Non-Specific Therapy in the Treatment of Mental Disorder arising from Chronic Infective Processes.* By Dr. T. C. GRAVES, F.R.C.S., Chief Medical Officer, Birmingham City Mental Hospitals Committee.

Treatment.

The essential treatment of mental disorder arising from an infective causation is the treatment of the infective process, original and resultant.

Unfortunately, by the time the chronic infective process has reached the stage in which mental symptoms have appeared, the pathological state has become advanced, whilst the patient is frequently not only non-co-operative, but even actively resistive to investigation, nursing and treatment.

The primary focus no longer has the capacity to react to the original infection by a discharge, “open” foci may have become “closed,” other foci may have developed, and in some cases these secondary foci have become

* Observations on some of the disturbances referable to the principal sensory fields in cases of oronasopharyngeal sepsis.—*Jl. Ment. Sci.*, January, 1931.

dominant ; multiple infections have taken place in these and in the primary focus ; and the infections and toxaemias from these various sources have also affected the circulatory, alimentary, excretory and other systems. Treatment must be directed first to the mitigation of the toxaemia and to the prevention of further absorption by the stimulation of a reaction against the infection in the primary focus. For these purposes, use is made of lavages and antiseptics locally, of alkalies and antisera medicinally. What is considered to be a valuable adjunct at this stage is calcium lactate in large doses in solution by mouth. It appears, amongst other useful effects, to stimulate a focal reaction.

Further treatment of the process includes surgery and the various forms of non-specific therapy. It is the purpose of this communication to concentrate on consideration of the relation of these two forms of therapy to each other in the treatment of mental disorder arising from chronic infective processes.

Non-Specific Therapy.

Non-Specific Agents.—In 1922 I communicated some observations¹ concerning the action of colloidal calcium oleate, given by injection, in conditions of chronic sepsis and toxaemia with mental disorder.

It was submitted that the effect of this agent was to cause or to increase a reaction, usually of a purulent character, in or around foci of sepsis ; the affected tissues are thus stimulated to eliminate the persisting infection.

It was also observed that, associated with the appearance of such a focal reaction, there was a diminution of the general toxaemia, as shown by improvement in the nutrition, circulation and in the mental state of the patient.

These focal and general effects following the use of colloidal calcium oleate are clinically very similar to the focal and general effects produced by various non-specific agents ; so that, for the present purposes, this agent can be included as non-specific.

Two other agents which have also been extensively used are colloidal sulphur and T.A.B. vaccine.

Colloidal sulphur, whether in oily or aqueous suspension, is capable of causing pronounced febrile and definite focal reactions.²

T.A.B., typhoid-paratyphoid A and B vaccine has been the agent used for non-specific protein therapy. It is capable of evoking powerful effects, both general and focal, in cases of mental disorder arising from sepsis as well as in other types of toxaemia.

Non-Specific Focal Reactions.—The focal effects consist of two stages, the active succeeded by the stage of resolution.

The *active* stage usually appears within twenty-four hours following the injection of the non-specific agent, and manifests itself in or around any localized inflammatory lesion by an increase of the phenomena of inflammation : increased vascularity, pain (direct or referred), swelling, exudate and disturbance of function.

Succeeding it is the stage of *resolution* during which there is a corresponding progressive decrease in the inflammatory reaction, tending towards healing, *until the condition of the local lesion obtaining before the injection has been reached and possibly passed*, even to cure of the focus and restoration of normal conditions.

In cases where the focus of sepsis is of the *open* variety, that is, its drainage permits of the free escape of the inflammatory products and especially of those associated with the active stage of the reaction, the induction of a non-specific focal reaction may alone be sufficient to cause discharge or reduction of the persistent infection with consequent cessation or mitigation of the toxaemia and so lead to mental recovery.

In cases, however, where the *closed* type of sepsis obtains, that is where drainage of the focus is defective or deficient for the free escape of

the inflammatory products, non-specific therapy is not likely to be conducive to mental recovery; and especially does this obtain in cases where the responsible focus contains necrotic material or exudates which are slowly undergoing digestion and absorption. In such cases the *increased activity* induced in the closed focus by non-specific therapy is followed by *increased absorption* of toxic products causing *increased toxaemia* and *therefore exacerbation of the dependent symptoms*, whether these are mental or physical.

The clinical observations which have been made on the focal effects following non-specific therapy may be grouped under three headings :—

Focal vascularization, swelling and discharge.

Local sensory and motor disturbances.

Herpes.

Focal Vascularization, Swelling and Discharge.

In Primary Foci.—Amongst clinical observations which have been made of the focal reactions to the non-specific agents mention may be made of the following :—

In patients with dental roots and carious teeth, where there is no purulent reaction, such reaction has appeared in active form after injections of colloidal calcium oleate. Similarly, in cases where cessation or diminution of discharge from chronic pyorrhoea pockets has been associated with physical and mental intoxication states, the administration of colloidal calcium oleate has produced a reappearance of purulent discharge and the associated intoxication states have diminished. Treatment by T.A.B. vaccine of cases with a uterine cervicitis resistant to local therapy has frequently been found to cause the discharge to cease and the cervix to attain a healthy state. In cases, however, where other septic foci are active, T.A.B. vaccine may not effect this result until these also have been treated surgically.

Both T.A.B. vaccine and colloidal sulphur have been observed to cause renewal of discharge from the mucosae of nasal sinuses which had been drained intranasally and had ceased to discharge, although symptoms of general toxaemia persisted. In some cases the reactivation of the inflammatory phenomena following such non-specific therapy has been so acute that the discharges have been haemorrhagic. Associated with or shortly after these renewed discharges there has in many cases been cessation of the toxaemic, including the mental, symptoms.

A few examples of focal effects caused by these non-specific agents may be given :—

Following a fall by a male syphilitic epileptic, an area of skin subcutaneous tissue and deep fascia over the outer side of the thigh was injured and eventually sloughed. Separation was slow, especially of the necrosed deep fascia and the granulations were poorly developed and anaemic. Daily hypodermic injections of colloidal calcium oleate were given in other parts of the body. It was observed that within an hour of an injection there was a definite increase in the vascularization of the injured part. The injections were continued. The discharges increased and soon the necrosed tissue was detached and healing continued rapidly and soundly.

A man of 65 with considerable oral sepsis developed a large boil on the nape of the neck, which, in spite of local treatment, remained indurated. A hypodermic injection into the arm of 5 cc. colloidal calcium oleate at 10.0 p.m. was followed half an hour later by a general feeling of warmth, but without pyrexia. Soon the boil began to throb, and a very carious tooth began to ache; by the morning suppuration was active in the boil, which rapidly healed.

In the two following examples, T.A.B. vaccine, given intravenously, caused a reaction in closed foci with resultant swelling of the neighbouring tissues :—

Following treatment of gross oral sepsis, a state of continued confusion with excitement in a woman became so much ameliorated that she became able to do useful work, but was subject to relapses of variable severity. There appeared to be no focus to account for these. She was edentulous and the gums were solidly healed. She was given a course of T.A.B. vaccine intravenously. Soon after the completion of the course severe confusion developed associated with a considerable swelling of the left cheek which subsided very slowly. A radiogram disclosed a buried left upper canine root which on exploration was found to be septic. Following its removal the confusion cleared permanently and she was discharged.

A course of T.A.B. vaccine was given intravenously to a girl, who was in a state of acute confusion with excitement. It was noticed after the course that both tonsils had become much larger than they were prior to the course. They continued enlarged. On their removal by dissection an abscess was found in each.

In the next example the T.A.B. vaccine caused a focal reaction ; but, as drainage was effective, a previously swollen septic state subsided. Acute confusion with excitement developed in a woman of 34 following a miscarriage. On examination the tonsils were found to be much enlarged, septic, and, with the adjoining pillars, showed venous congestion. A course of T.A.B. vaccine was given intravenously ; soon after its completion the tonsils were found to be of normal size, colour and considered to be healthy. Mental recovery soon followed.

In the following case an autogenous respiratory vaccine activated some latent closed dental foci. A married woman of 56 with mitral valvular disease and persistent bronchitis, following pneumonia and pleurisy, was given an autogenous vaccine from sputum. Her teeth were not considered to require treatment and she had made no complaint about them. As the course of vaccine proceeded mental symptoms appeared and increased in intensity until complete confusion obtained. At this stage she came under my notice. Examination found six teeth in a very septic state, the gums were cyanosed and boggy with pent up pus. These teeth were removed in three stages. On the completion of this treatment the confusion had cleared. Six weeks after the first teeth were removed there were no crepitations and no sputum ; she was mentally as well as ever, memory, concentration and reasoning power and will power were fully restored, and she had resumed charge of household and household accounts.

In Secondary Foci.—In cases of closed sepsis, the use of non-specific therapy may cause exacerbation of secondary foci. When these foci are situated in the skin it becomes possible to observe the focal effects of non-specific therapy in more detail.

An example of this effect is illustrated by Fig. 25 in “Chronic Nasal Sinusitis.”³ On admission, this case showed a few scattered small papules on the face, but in none could the tissue reaction be termed active. After a course of T.A.B. vaccine, these secondary foci developed an intensely acute inflammatory reaction, but they completely disappeared after removal and drainage of the primary foci.

Local Sensory and Motor Disturbances.

Included in the Focal reaction evoked by non-specific therapy may be sensory and motor disturbances caused directly or reflexly by involvement of the peripheral nerves in the exacerbation of the chronic inflammatory process.

The nature and severity of these disturbances will vary, depending on the agent employed and on the condition of the pathological process. Other conditions being equal, T.A.B. vaccine is most, and colloidal calcium

is least, likely to evoke these disturbances which will more probably develop in cases of closed than open sepsis.

They generally include exacerbations or renewals of any neurological disturbances which have already appeared for longer or shorter periods, and with these there may be other disturbances of similar nature, but different quality or altogether different character to those previously experienced.

In some cases their recognition may be difficult, where, as in cases of closed sepsis, there is a coincident exacerbation of mental confusion also mediated by the non-specific agent ; in these cases the sensory disturbances may be perceived only in hallucinatory guise.

In such cases not until the patient recovers may it be possible to obtain information as to the extent of the exacerbation. That these disturbances depend on the condition of the focus may sometimes be effectively demonstrated by ascertaining the effects of non-specific therapy on a case before and after surgical treatment of the focus. When the focus is in the closed state, T.A.B. vaccine may evoke a number of disturbances referable to the principal sensory fields, but, when it is given after drainage has been made effective, the disturbances are generally much more limited in number, character and severity.

Herpes.

In a considerable number of cases of mental disorder, similar to those described in the series, the administration of T.A.B. vaccine, especially intravenously, has been followed by the appearance of an herpetic eruption. Occasionally this has been observed associated with colloidal sulphur therapy, but it occurs very rarely after colloidal calcium injections.

The herpetic eruption does not occur with every case and is therefore not an invariable accompaniment of pyrexia, however induced. It has occasionally occurred apart from pyrexia, following the surgical treatment of a chronic oro-nasal infective process. During a course of intravenous T.A.B. vaccine therapy comprizing eight injections, given on succeeding or alternate days, the herpes usually appears after the second or third injection in the form of small papules which rapidly pass through vesicular, pustular, haemorrhagic phases to scab formation.

After its first appearance the eruption may increase in area following the next two or three injections and then persists throughout the course, disappearing completely a week after the temperature has fallen and leaving no scar.

The papules are usually small, pinhead size, and then confluent, but occasionally they are larger and discrete. In some cases the haemorrhagic phase is more marked, whilst in others the purulent phase, yellow in some and white in others, is more pronounced. The usual situation is on the distribution of the second and third divisions of the fifth nerve, on the skin of the lips, angles of mouth and chin, but it may also appear on the distribution of the ophthalmic division, on the nose, around the eyes, on the forehead and sometimes on the scalp. Occasionally it may appear on the distribution of the upper cervical nerves. In some cases its appearance is more marked on one side than the other, and then it has been found that the affected side is that on which the septic foci are principally located. In a few cases herpes has appeared wholly on one side and in correspondence with similar distribution of septic foci. The eruption is much more pronounced in some cases than in others. With closed sepsis, where T.A.B. vaccine has been given, the eruption is usually much more profuse than that which appears when the T.A.B. vaccine is again applied after the sepsis has been removed or drained. The two observations of the relation of the eruption to the distribution and to the condition of the drainage of the underlying septic foci have led to the conclusion that the herpetic eruption is part of the focal exacerbation reaction to the non-specific therapy.

Infection has reached the skin by way of the perineural lymphatics from the foci situated on the distribution of the nerves and the eruption is the reaction of the skin to that infection.

General Effects Induced by Non-Specific Therapy.

The immediate general effects evoked by non-specific agents vary considerably depending upon the nature of the agent and the mode of its administration on the one hand and the condition of the patient on the other.

With some agents the general effects are so pronounced that the focal effects are dwarfed and may even pass unrecognized. Nevertheless the condition of the focus is most important in relation to the general effects. It has already been pointed out that the general effects may largely depend on the state of drainage obtaining in the focus and the character of the focal reaction. Generally it may be observed that the more defective the focal drainage the more severe are the general effects.

These general effects may include the component symptoms of mental states.

Some of these general effects are now considered :—

The Rigor.—Injections of colloidal calcium oleate have not been observed to be followed by a feeling of cold nor by the appearance of shivering.

The usual reaction within the hour following injections of this agent is a general feeling of warmth, but not usually accompanied by a rise of temperature.

In several cases definite rigors have occurred following intramuscular injection of sulphur, usually from $\frac{1}{2}$ to 4 hours before the maximum temperature is reached. These rigors are generally of a minor character compared with those evoked by T.A.B. vaccine, especially when that agent is given intravenously.

Sweating.—Is a common accompaniment of the disturbances evoked by T.A.B. vaccine, but is not so common following injections of sulphur. With both agents, sweating, when it occurs, may be profuse.

Disturbance of Temperature.—Definite pyrexial reactions usually follow the administration of T.A.B. vaccine intravenously and colloidal sulphur intramuscularly.

The pyrexia following T.A.B. vaccine given intravenously usually occurs within one to two hours of the injection and is commonly preceded by rigor. With colloidal sulphur the acme of the rise of temperature does not usually appear until twelve hours following injection. It is not unusual for the pyrexia evoked by T.A.B. vaccine and at times by colloidal sulphur to show, following the primary rise and fall, one or more secondary rises.

In the case of T.A.B. vaccine, the primary rise is considered to be due to the direct action of the non-specific agent itself on the heat centres. Clinically, there appears reason to attribute secondary rises to the action of the additional toxic absorption arising from the non-specific activation of the focus.

In some cases more than one secondary rise occurs, but rarely does a secondary rise exceed the primary reaction. Secondary rises are usually met with early in a course of non-specific injections and disappear, or are much less prominent, later in the course. The persistence of a secondary pyrexial reaction is highly suggestive of the presence of a focus with defective or deficient drainage.

Where secondary reactions appear after the primary rise has subsided, in cases with "open" or with "closed converted into open" foci, as the course of therapy continues, the secondary reaction becomes merged into the primary wave, appearing as a well defined and later as a less well defined rise on the falling curve and then ultimately disappearing.

As a consequence of the disappearance of the secondary reactions, indicative of diminution or cessation of toxic absorption from foci, the pyrexial period becomes shortened, the thermogenic mechanism having only to respond to the non-specific agent.

Some examples illustrating these observations are :—

In a woman of 42, gross bilateral antral, sphenoidal, tonsillar and dental sepsis was drained and, or removed and, later, T.A.B. vaccine was given intravenously. A rigor was followed by pyrexia with a maximum rise to 102.6° F., falling to 98° , rising next day to 101° , then falling to 97° , rising on the following day to 100.4° and then fell. On account of these two secondary rises the non-specific therapy was suspended, but other treatment of the chronic infective process was continued. Later in the progress of the case the T.A.B. vaccine therapy was renewed, primary rises of 103.8° and 104.2° were obtained, but without secondary reactions.

In another case the sequence of events was as follows :—

Early in a course of T.A.B. vaccine therapy, the patient received 500 million organisms intravenously. A severe rigor occurred and was followed by a rise to 103.4° F., profuse sweating accompanied the fall to 101° F., a rise to 102° followed and then a fall to normal. The whole pyrexial period lasted 22 hours. Later in the course, an injection of 900 million organisms was followed by a rigor, a rise to 105° , fall to 101° then rise to 102° and fall to normal. The whole pyrexial period, however, only lasted twelve hours.

Secondary reactions can appear after colloidal sulphur injections. One case showed primary rises to 104.8° and secondary rises to 102.6° F. with the agent.

Pyrexial responses following injections of colloidal calcium oleate are unusual and when they occur are due to secondary, i.e., focal causes, generally appearing 12–24 hours after an injection. In this relation it may be noted that, whilst large doses of this agent can be injected without resulting pyrexia in cases of sepsis and mental disorder, yet small doses similarly given to cases of pulmonary tuberculosis evoke definite pyrexias.

Grades of Pyrexial Response.

A study of a large number of temperature charts following the intravenous administration of T.A.B. vaccine in cases of mental disorder arising from chronic infective processes shows that differences exist between individual patients in their pyrexial response to foreign protein.

These differences cannot be attributable to the condition of the material employed, because two or more patients in the same ward receiving material from the same bottle, on the same day, by the same operator will show different reactions ; nor can the differences necessarily be attributed to the dose, because a larger dose may sometimes cause less increase of temperature than a smaller dose.

The differences under consideration are not those based on the reaction to one injection, but on those obtaining between patients when the average primary pyrexias of a course of at least three injections are compared, all of which are fairly uniform in their range.

Patients can thus be grouped into five grades, depending on their average responses to a course of T.A.B. vaccine. The following is an arbitrary but useful grading :—

1. Those whose response does not exceed 98.6° F.
2. Those where the response lies between 98.6° F to 100° F.
3. Those where the response lies between 100° F. to 102° F.
4. Those where the response lies between 102° F to 104° F.
5. Those where the response is above 104° F.

In this way the pyrexial reaction to T.A.B. vaccine provides an indication of the condition of the heatgenerating and regulating mechanisms of the individual.

It is thus found that a considerable number of cases of mental disorder arising from chronic infective processes are hypothermic, not only on ordinary grounds, but by their pyrexial reaction to T.A.B. vaccine. An example is the following: A case in which the ordinary temperature was between 96.8° and 97.6° F. and the pyrexial response to T.A.B. vaccine would be that of the third grade, the maximum pyrexia only reaching 101° F. However, the hypothermic state is not necessarily a permanent condition. It may be one of the manifestations of the chronic infective state and therefore improve when the chronic infective process is treated.

The Rôle of Induced Pyrexia in the Therapeutic Mechanism.

Of all the effects evoked by the use of non-specific agents, pyrexia is generally such a striking phenomenon that it has become usual to attribute any benefit following their use to the heat to which the patient's tissues are subjected rather than to the non-specific agent and the associated focal reaction which, in cases of open sepsis, results in discharge of infection and so diminished intoxication, general and local.

Some of the cases which have been included in the following series would suggest a reconsideration of that therapeutic attitude to pyrexia *per se*, and certainly so in the treatment of cases of mental disorder arising from chronic infective (non-syphilitic) processes.

In the series will be found cases who have experienced pyrexia induced by non-specific therapy and have shown a definite improvement in their mental disorder, followed by recovery, in near relation to that therapy. In all these cases the benefit following the treatment might be attributed to the pyrexia evoked.

On the other hand some cases are described who received similar pyrexial treatment, in some cases twice, but who did not improve during, nor immediately after that treatment, nor following periods, permissive of the appearance of delayed action, of up to two years afterwards. In fact, in some instances these cases were temporarily worse mentally after the pyrexial treatment. Yet these cases were capable of recovery, as shown by the fact that they later did recover following the application of treatment similar to that which had been applied to those of the first group before they had received non-specific therapy. That treatment was the surgical treatment of foci of sepsis. If we were dealing with a diseased state where a high temperature was certain to destroy the infection, the value of pyrexia as a therapeutic agent would then be apparent; but such does not obtain with the cases under consideration. Pathogenic organisms in foci of sepsis have been found to be still active in cases who have not recovered mentally, although they have been subjected to pyrexias evoked by non-specific protein therapy.

Further, many cases with equally serious symptoms and similar lesions and history, recover from the mental disorder without having recourse to induced pyrexia, whether severe or mild. Recoveries in these cases have followed treatment of the foci of sepsis by surgical means combined with non-pyrogenic non-specific therapy.

Consideration of these several groups of cases has led to the view that it is not the pyrexia *per se* which has effected recovery. The pyrexia is merely the response of the heat generating and regulating mechanism to the real therapeutic factor, the non-specific agent.

The pyrexia can therefore be regarded as an indicator of the activity of certain non-specific agents which are incidentally capable of causing the heat mechanism to respond to their presence. Further, the grade of the pyrexia is a measure of the capacity of the heat mechanism of the individual patient to respond and is therefore a measure of its efficiency and of the individual's vitality. Under conditions of toxæmia that efficiency can be reduced to various levels, so that the various grades of pyrexial response can be regarded as indicative of the severity of the general toxæmia.

The removal and resolution of foci of sepsis may be followed by an improved efficiency of the heat-producing and regulating mechanism with the result that a hypothermic subject acquires a normal temperature, and is able to give normal responses to pyrogenic agents.

An improvement in the efficiency of the heat mechanism is frequently associated with a general metabolic improvement and so with an improved mental capacity.

Circulatory Disturbances.

Colloidal calcium oleate causes a general improvement in the peripheral circulation; in some cases a pronounced flushing may be observed. A similar effect may be seen in many cases following colloidal sulphur therapy. T.A.B. vaccine evokes a general vasoconstriction, the patient for a short time shows pallor and then cyanosis before vasodilation occurs producing a rosy facial colour. Calcium has no appreciable effect on the pulse. With sulphur the pulse increases, but very rarely exceeds 120, e.g., a temperature of 104.2° F., following an intramuscular injection of colloidal sulphur, was associated with a pulse rate of 94 and a respiration rate of 24.

With T.A.B. vaccine given intravenously the pulse rate is usually considerably increased, and, depending on the case, the pulse rate may be increased with but little pyrexial response being manifested. However, following treatment of the septic state this disparity may disappear.

An example may be given. In a case during the early stages of treatment a course of T.A.B. vaccine evoked poor pyrexial reactions, 98.4° to 101° F., but each with an increase of pulse rate from a usual 80 to 140.

Later, and coincident with mental improvement, following removal and drainage of septic foci further courses of T.A.B. evoked improved pyrexial and pulse reactions, e.g., 102.2° F. had a maximum pulse of 116 whilst the last injection which evoked a pyrexia of 104.4° F., was associated with a maximum pulse of 130.

This case shows that, following treatment of the chronic infective process, there may be improvement in the mental state, the hypothermic state and increased cardiac stability to foreign protein.

Gastro-intestinal Disturbances.

Nausea and Vomiting.—Have only been observed following T.A.B. vaccine therapy and are not uncommonly met with in these cases of mental disorder arising from chronic infective processes after that therapy.

In many of these cases, the discharges from oronasopharyngeal sepsis have been responsible for persistent gastric irritation and gastritis. In such cases the occurrence of these symptoms suggest that a gastric focal reaction has been set up. As a rule these disturbances soon cease.

Relaxed stools.—More commonly following T.A.B. vaccine, but occasionally occurring after sulphur injections, is an increase of peristaltic activity resulting in the frequent passage of relaxed and even watery stools. In some cases the increased activity is limited to the rigor period but in others it continues throughout the whole period of the reaction. In such cases the continued bowel activity suggests that a non-specific focal reaction has been induced around secondary open foci in the intestinal mucosa.

That a focal reaction in the bowel mucosa does occur in many of these cases is shown by the increase or appearance of masses of mucopus in the returns of continuous colon irrigation after an injection of T.A.B. vaccine.

It appears worthy of record that, in no case out of several hundreds to whom non-specific treatment has been given, has appendicitis, cholecystitis or other acute abdominal emergency been activated.

General Comparison of the Three Non-Specific Agents.

Colloidal calcium oleate is the mildest of the three agents, is slow in action, does not cause serious discomfort at the inoculation site; its general

effects are the least striking, but its focal effects are valuable. It is especially useful in cases where it is desirable to stimulate a focal reaction slowly and to avoid putting a stress on the circulatory mechanism. For those reasons it is useful in the early stages of treatment.

T.A.B. vaccine when given intravenously is the most rapid and most powerful of the three agents in evoking the general and focal phenomena of the non-specific reaction. Care must be exercised in the selection of the case for its use as well as in its administration, on account of the stress put on the circulatory mechanism.⁴

Colloidal sulphur is slower in action, causes discomfort—which passes away later—at the site of intramuscular inoculation, but has little or no untoward effect on the circulation. In some cases it has appeared to have had a remarkable healing effect on persistent discharging nasal sinuses, causing cessation of discharge and diminution of toxæmia.

Surgical Treatment of Foci.

The removal and drainage where possible of sepsis foci is an essential part of any treatment directed to the chronic infective process.

Old exudates and necrotic material, whether dead bone, tooth or other tissue must be removed and provision made for the escape of discharges already present, as well as for those which will appear as part of the reaction of the infected tissue to any specific or non-specific therapy.

Not only has the “closed” focus to be converted into “open,” but it must be maintained in the open state for some time.

In some cases, however, it would seem that antiseptic irrigation or temporary drainage may be all that is required.

In other cases the symptoms disappear after drainage, but soon return following healing of the artificial drainage opening. When this has again been made patent the symptoms again cease.

The provision of adequate drainage of the focus is rarely followed by exacerbation reaction; but interferences without that provision, if sepsis be found, may be followed by exacerbation of symptoms whether these are mental or physical.

It has been very remarkable and worthy of record that with the use of the Watson-Williams technique and a prompt drainage where exudate has been found, there has been so very little, if any, exacerbation reaction of even a temporary character.

It is further to be noted that in many cases this technique has been practised for the six sinuses under local anaesthesia only.

Combined Surgical and Non-Specific Therapy.

The employment of the combination of surgical treatment of the causative foci and non-specific protein therapy was described⁵ with an illustrative case of acute mental disorder treated in this way in 1927.

In subsequent communications 2, 6, 7, 8, 9, dealing with the relation of chronic infective processes to mental disorder further cases have been described where this combined treatment has been followed by recovery.

The study of these, and of a large number of other cases similarly and successfully treated, has shown that considerable variation exists between them as to the situation, nature, and extent of the responsible infective process; but they have one point in common—the *infective process has been in existence for a considerable period before mental symptoms are shown.*

It is therefore not surprising that the surgical procedures of removal of diseased tissues and of establishing drainage in order to change the focus from “closed” to “open” sepsis may be insufficient to effect recovery of the whole body from the toxæmia and the focal tissues from the local poisoning. The production of a state of “open” sepsis may only partially relieve the symptoms; the mild non-specific agents may also similarly be ineffective; but the continued application of the more powerful non-

specific agents causes a severe but effective reaction in the diseased tissues which is followed by recovery.

In other cases where there remains locally the capacity to maintain a good leucocytic reaction to an infection, then, combined with surgical procedures for the provision of drainage, the milder non-specific agents may be sufficient to stimulate an effective focal reaction and this may be sufficient to produce local resolution, reduction of toxæmia and mental recovery.

In yet other cases the infective process has passed too deeply for these methods of treatment to be of any avail.

Illustrative Cases.

Reference is made to cases already published, and a series of twenty-one cases, of both sexes and varying ages, types and duration of mental disorder, is appended, arranged in groups for the purpose of illustrating the value of non-specific, and also specific, therapy in relation to surgical treatment of foci of disease in mental disorder arising from chronic infective processes.

In the first group are cases where calcium oleate therapy combined with surgical treatment of foci of sepsis was followed by the recovery of physical and mental health. The second group is formed of cases which did not improve with the treatment which was successful with those of the first group, but did recover when the more potent non-specific protein and/or sulphur therapies were given, after the surgical procedures had been completed. In view, however, of the time which elapsed between the surgical treatment and the non-specific protein therapy in some of the second group cases it might be considered that, after all, the surgical treatment was unnecessary and that the whole credit for recovery could really be attributed to the non-specific protein therapy. In fact it might be considered that, if the more potent pyrexial therapy had been applied earlier, the surgical treatment might not have been required.

Such a simple mode of treatment for all cases has often been found to be unsuccessful, as the next group shows. This, the third group, includes cases where non-specific protein therapy given before surgical intervention failed to achieve the complete beneficial results which—within a month in some cases—followed the surgical treatment of the foci. Not only did the non-specific protein therapy fail to bring about recovery but actually some patients were observed to be, for a period, definitely worse mentally following its use.

The conclusion to which this last group points is confirmed by study of the fourth group. Here are cases where non-specific protein therapy was given before surgical intervention and employed again after surgical intervention was completed, with successful results. In these cases the histories indicate that the chronic infective process responsible for the mental disorder was of considerable duration.

However, it may be urged that the use of non-specific therapy is unnecessary and that, if bacterial protein is required, it would be better to use an autogenous vaccine. A case in which such treatment had been applied when the mental symptoms were in the early stages is described in the fifth group. In this case, and in others where the use of autogenous vaccine has been followed by the appearance of serious mental and physical disorder, recovery followed the treatment of closed septic foci.

Again, it may be urged that the use of antisera, especially anti-streptococcal, might be sufficient to obviate the use of non-specific therapy and surgery. The sixth group includes cases where the treatment has included the use of polyvalent antistreptococcal as well as antiscarlet sera. In some cases of open sepsis the use of such sera might be followed by mental recovery. However, in the cases described here, recovery did not ensue until the closed foci had been thoroughly treated.

The question may arise, however, as to whether any other therapy than the purely surgical is really necessary. Reference back to some of the cases in the second group shows that an activating agent is essential in some, and, generally, is desirable in most cases. A case has nevertheless been included to demonstrate that there are some cases where the purely surgical treatment may be all that is required. Such cases do occur, but even this case required a year after completion of surgical treatment for recovery to ensue. It is possible that this recovery might have been accelerated by the use of non-specific therapy.

The relation of syphilis to septic disease is discussed in a case where the central nervous system is involved.

Finally, consideration must be given to the view which honestly doubts the pathological viewpoint and the necessity for this elaboration of treatment, any or all of it. Some cases are included in this series to meet this view. Cases 5, 8, 13, and 16, had for varying periods of time, up to twelve years in Case 5, been under treatment without success in this and other mental hospitals before the application of the treatment which resulted in physical and mental recovery.

GROUP I.—*Cases in which Mild Non-Specific Agents were combined with the Surgical Treatment of Foci.*

Five cases have been described to illustrate this group.

The first case illustrates the persistence of nasal sepsis after what was regarded as attacks of influenza. The process passed through the stages of mucosal reaction, the appearance of sensory disturbances, which became more pronounced as the mucosal reaction diminished, then emotional disturbances and finally intellectual changes. In this case the process resulted in certified mental disorder at twenty.

In the next, the second case, there had been an attack of mental disorder at forty-one to be followed by the appearance of another attack at forty-six. There was some lower respiratory tract involvement associated with a left-sided multisinusitis. Following surgical treatment of the nasopharyngeal sepsis and mild non-specific therapy a substantial recovery appears to have been made.

Case three affords an excellent example of the persistence of nasopharyngeal sepsis following measles and its extension to the whole respiratory tract, the pericardium, and the involvement of the nervous mechanism of mind in the toxæmia. There was a very definite family history of cardio-respiratory disease and mental instability. In this case and at the acme of its activity, the development of the chronic infective process appears to have been completely arrested by the application of non-specific therapy and the removal and drainage of foci of sepsis. The physical and mental recovery following this treatment appear to have been consolidated.

In case four there is a history of frequent colds and of mental symptoms of six months duration prior to admission in October, 1923. When the acute symptoms had calmed the patient passed into a state highly suggestive of chronic encephalitis lethargica and a mental state of dementia associated with serious cardiovascular involvement. The severity of the vascular symptoms varied and the opportunity was seized during a state of diminished intensity to deal with nasal sinus sepsis and with very satisfactory results. Five months after non-specific therapy and the first nasal operation, nearly five years after admission and five and a half years after the onset of the mental symptoms she was discharged recovered in July, 1928, and has since been able to support herself in employment. The indications of organic disease of the nervous system had disappeared.

The fifth case illustrates the successful application of the combined use of non-specific therapy with removal and drainage of foci of sepsis to a woman who had been under treatment in four mental hospitals for a period of fourteen years.

CASE 1.

H.D.P., male, single, machine hand, aged 20 on admission on April 23rd, 1928. First certification.

History.—Family: No psychotic history. Father: Was of a nervous disposition, would complain of headaches, often sat holding his head. In 1907-08 operations for appendicitis. Killed in action in France. Mother: Alive and well, healthy at birth of patient. Brothers and Sisters: Three brothers and one sister. All well.

Personal.—Not a nervous child, always quietly behaved, fond of reading, did not mix much with other boys, never had a sweetheart. Worked as a packer on leaving school.

Medical History.—Scarlet fever in 1914, very ill, in hospital for two months. Measles in 1916. Three attacks of influenza, the last during the winter 1926-27. In bed for three weeks, nose bled a lot at that time. Constant catarrh after this, for twelve months soiled 2-3 handkerchiefs daily. In early winter 1927-28, again ill, perspired freely, evening rise of temperature, capricious appetite, twitching round eyes, complained of fogginess and blackness in front of eyes, vertigo in the mornings. Was confused and forgetful. Suffered with headaches and pain behind the eyes for 4-6 months before admission. On the whole he had been irritable, lacking in energy and unable to do his work properly for twelve months before admission.

Present Illness.—Premonitory symptoms can be traced back to the last attack of influenza, more acute manifestations of mental disorder appeared a month before admission. He lost weight, slept poorly, became increasingly irritable, displayed an altered attitude to his mother and sister, whom he locked out of the house. On occasions was passionate and threatening, thought his sister was "talking about him," developed persecutory delusions about his fellow workmen. Memory poor. It was reported on admission that he thought he had broken up the Workers' Union at his place of work and that the police were after him. He appeared lost and apathetic, but had periods of violent temper for no apparent cause, and was strange in his manner. His condition was considered to be one of dementia praecox.

On Admission.—Physical: Height 5 ft. 6½ in. Weight 8 st. 0 lb. Moderately well developed and nourished. Pale face, bluish hands. Thyroid not enlarged. *Heart*: Mitral regurgitation. Apex beat 4 in. from midline. Rhythm regular. Pulse 78. *Mouth, etc.*: Teeth. Some carious. Pyorrhoea. Injection of right anterior pillar of fauces. Pus in groove behind right posterior pharyngeal band. Says he has had catarrh for some months, discharge is a thick liquid, generally white, no lumps. *Nervous System*: Vision—says is foggy, spots came in front of eyes at same time as headache. Has seen two objects instead of one at times, over a period of some months. Left eyeball more prominent than right. Pupils equal, oval, flattened from side to side. Left divergent squint. Ptosis left. No pain at vertex or occiput. No feeling of pressure inside head. Slight frontal headache for twelve months, especially during a "cold." Right side of face moves more freely than left on voluntary movement. Has occasionally had "bad tastes." *Reflexes*: Superficial, easily elicited, flexor plantar response. Deep—easily elicited, equal. No clonus. Sphincters under control. No anaesthesia. Some tremor of hands. *Muscular System*: Fair tone and development. *Abdomen*: Some dilatation of stomach. Feels bilious when has headache. *Urine*: 1,020. Nil abnormal. *Blood*: Wassermann test—negative. Widal test—negative to all groups.

Mental State.—Depressed, dull, apathetic, asocial, attention obtained with difficulty. Appreciation and replies to questions only fair, latent period increased. Retardation of ideational processes. Orientation, memory and volition only fair. Appears to have periods of confusion. Delusions of persecution and unworthiness. Ideas of reference and auditory hallucinations, says he has heard people talking about him. Head droops, frontal corrugations.

Course.—Bowels irrigated and ultra-violet light given. Jaws radiographed.

May 22nd: Dental. Extraction of carious teeth and roots. Following this there was some diminution in confusion, now says "everything was in a maze when he came in." Injections of colloidal calcium oleate given.

June 15th: Ear, nose and throat examination and under general anaesthesia. Nasal sinus examination by Watson-Williams technique. Pus both antra, more in left. Antral walls sclerotic—both antra drained. Removal of fibrotic septic tonsils by dissection.

July 2nd.—Some improvement, able to do light work out of doors. Is more alert and sociable. Auditory hallucinations not so marked.

August 12th: Says has not heard "voices" since nasal operation. Feels "quite all right now." Has insight and shows marked improvement physically and mentally.

September 9th: *Review: Physical*.—Erect carriage, forehead smooth, facial colour, mobility and tone much improved. No squint. Pupils are equal, both show

some slight flattening, the left contracts more quickly than the right to light. Uvula and fauces pink. No pus seen. Pharynx, appears healthy. Antral wash-outs clear. Peripheral circulation much improved. Has gained 8 lb. in weight on admission.

Mental.—Appears alert, replies brisk, well orientated. Able to discuss his case without embarrassment, volunteering comments, exhibits normal composure and humour. Work and conduct in and out of the hospital quite satisfactory. Has been on leave from hospital with his relatives. Realizes fully that he was in such a state on admission as to need mental hospital treatment. Knows he was confused, nervous and had strange ideas. He used to think people were looking at him and talked about him, he believed that they thought he walked in a peculiar way and that he was trying to do them harm. He volunteers that at that time he was fearful and had certain dreads, e.g., he was afraid of mixing with people but was not afraid of going alone into an open space. He became very nervous and confused in a crowd. He was not afraid of policemen. He did not like to go to places of religion or amusement, or even a darkened place such as a cinema, on account of being with other people. This dislike had developed during the last three years, for before then he went to cinemas. These ideas and fears have now entirely gone, he has been to the hospital cinema and also to one outside when on leave with his relatives, without having a recurrence of the dread and quite enjoyed the show. For twelve months before admission he knows he had been abnormally peevish, irritable and bad tempered. Considers the depression he had developed caused the bad temper and made him tired of life. He now feels very much better, more composed and is not irritable. He began to see double some months before admission. The blurred image was always on his left side. The diplopia was worse in the mornings. It has now disappeared. The aching at the back of the left eye passed away when the antral irrigations gave a clear return and has not returned.

Discharge.—September 4th, 1928. Sent out on trial in care of his mother.

October, 1928: His doctor reports that he no longer requires mental hospital treatment. His relatives and the Visitor's reports are satisfactory. Discharged as recovered.

February 1st, 1929: Visitor's report. Mental and physical state satisfactory. Sleeps much better. Appetite good. Weight normal.

October 16th, 1929: Visitor's report.—Mental and physical condition quite satisfactory. Sleep and appetite good. Weight normal. No illness or throat trouble.

July, 1931: Satisfactory reports.

CASE 2.

7230. G.B., male, married, painter, aged 46 on admission on September 20th, 1928. Second certification.

Family History.—No insane relatives known.

Personal History.—In regular employment until this breakdown. A history of alcoholic indulgence given, but obviously not gross, otherwise employer would have dismissed him. Under certificate elsewhere for an attack of mental disorder with excitement from June 20th, 1923, to September 8th, 1923.

Present Attack.—Regarded by relatives as of two weeks' development. Not epileptic or suicidal. It was reported that he behaved very strangely, e.g., put coloured water into bottles and called it ———'s Fair, washed a cup and saucer in a chamber vessel, rubbed paint off the doors and daubed the table with paint. Talked nonsense, said he was the King. When remonstrated with by his wife he chased her out of the house. It was found on medical examination that he was excited, had an undue sense of well being, an exaggerated self-esteem, chattered incoherent nonsense and played with bottles containing coloured water and other objects. He displayed unnecessary anger towards his wife.

On Admission.—*Physical State*: Height 5 ft. 5 $\frac{3}{4}$ in. Weight 8 st. 11 lb. Temperature 97.8° F. *Heart*: Limits, normal. Sounds, pure. Rhythm regular, rate 62. High tension pulse B.P. 194/110 recumbent. Peripheral circulation fair, face sallow. Arteries, radial, some commencing sclerosis. No oedema. *Lungs*: Rhonchi at both bases. Respiration rate 20. *Mouth, throat, etc.*: Much oral sepsis, many carious teeth, pyorrhoea, gums receding. Fauces and palate congested. No pus seen in oropharynx. Thyroid not enlarged. *Nervous System*: Pupils equal, react to light and accommodation. No nystagmus, no squint. Left nasolabial fold more marked than right, left angle of mouth drawn slightly upwards. Hearing good. Other cranial nerves appear normal. *Reflexes*: Superficial, active; plantar response flexor. Palatal reflex present. Deep—equal and normal. No clonus. Kernig's sign absent. Sphincters controlled. Co-ordination, equilibrium, gait and articulation normal. *Muscular System*: Tone and development fair. Abdomen—nil. Urine—nil. No evidence of venereal disease.

Mental State.—Facial expression alert though suspicious. Confused, disorientated for time and place. Recent memory poor. Exalted. Voluntary and instinctive attention apparently fair. Replies to questions fair but evasive. States he sees and hears all manner of things; unknown voices talk to him, but is evasive as to their character. Supercilious and exalted in his mode of speech. Some display of flight of ideas. Judgment and insight lost. Resistive to nursing attentions, attempts to strike, impulsive, trips the male nurses. Threatening and abusive, noisy, restless and chattering.

Course.—Dental treatment and a course of bowel irrigations commenced. Four carious teeth extracted. Wax removed from ears. After the sixth day following admission he was quiet and well behaved by day, although restless, chattering and abusive by night until October 2nd. Thereafter, although showing no active symptoms, his manner was grandiose, resentful and arrogant and there was evidence of the persistence of hallucinations.

On October 3rd, 1928: Examination by the ear, nose and throat surgeon. Ears—normal. Pharynx—granular pharyngitis, sticky mucus over the whole pharynx. Tonsils—buried, surfaces infected, pus in the right. Anterior nasal space—left, much sticky mucus; right, wet injected mucosa. Septum to right. Transillumination of sinuses. Antra—right, fair; left, black. Frontals—right, fair; left, dull. Dental and bowel irrigation treatment continued and a course of ultra-violet light commenced. Preceded by injections of colloidal calcium oleate on three successive days.

October 17th, 1928: Under general anaesthesia, a general sinus examination. Sphenoids—right, nil; left, mucus. Ethmoids—right, osteoporosis, no pus; left, osteoporosis and flakes of pus. Antra—right, nil; left, large quantity of pus. Intra-nasal drainage of left sphenoid, left ethmoid and left antrum. Removal of anterior end of left mid turbinal. Dissectional removal of tonsils.

Bacteriology of sinus wash-outs (aerobic cultivation only).—General nasal swab—Staph. albus. Sphenoids—sterile. Ethmoids—sterile. Antra—both—Staph. albus. Portion of mid turbinal mucosa—Staph. albus. Interior of a piece of bone from antral drainage operation. Staph. albus and a large Gram positive diplococcus. Dental treatment, ultra-violet therapy and continuous colon irrigations were continued.

November 17th, 1928: Improving appreciably, co-operated in treatment.

A Review at the end of November, 1928.—Conduct in the ward excellent, helps in a useful and interested manner, displaying initiative. Appears bright, cheerful and intelligent. Attitude satisfactory, calm and composed. Replies to questions intelligently and frankly, volunteering information and co-operating in examination procedures. Has insight into his case and is able to describe his experiences and sensations before and after admission to hospital in a way that indicates the information is completely reliable. The mental confusion and the grandiose supercilious manner have quite passed away and he is appreciative of what has been done for him. Is now fully orientated for time, place and persons. He only partly remembers admission but realizes he was then ill and “run down.” He had had to give up work five days before admission as he felt too tired to carry on, was depressed and did not want to be bothered. He now realizes he was irritable and adds that any excess of noise made him annoyed. Remembers talking nonsense and behaving foolishly, considers he was delirious then, e.g., remembers saying he was a king, also remembers fooling about with painting colours on the table. He now feels no animosity towards his wife. Asked what treatment, in his opinion, has done him most good, he replies that the nose and throat operation has made him feel ten years younger, he feels robust and active, his head feels clear now and “in every way I feel better.” Whereas formerly he was unable to give any coherent description of his sensations it is now possible to elicit the facts of a slowly progressive illness which commenced during the preceding winter and culminated in a mental disturbance in the following autumn. Although he had no definite acute attack of influenza during the winter of 1927–28, he says that during this time he began to have difficulty in breathing, he was wheezy especially in the morning, and brought up a fair amount of phlegm. He now feels much easier in his breathing and can walk without fatigue, which he was not able to do at the corresponding season last year.

About March, 1928, headaches developed, at first occasional, “on and off,” but during the summer their incidence and intensity increased, so much so that during the three months preceding admission they were constant, worse at night, especially after a hard day's work. He had no desire to work in the sun as he could not tolerate the heat, preferring always to work in the shade. The headaches were frontal to vertical and occipital, worse on the left side (he uses his left hand to illustrate their location), he volunteered that he felt as if he had a weight on the top of his head pressing him down, the headaches being of a throbbing character. Coincident with the headache was insomnia and depression, and in order to obtain sleep he took a glass of ale at night. Cannot remember having had soreness of the scalp. The weight sensation passed

away a fortnight after admission and the other headaches cleared after the nose and throat operation. He had been troubled all the summer with colicky pain in the middle of the abdomen which passed away shortly after admission. He has now a good appetite and the bowels act well. Before admission roaring noises developed in both ears, especially at night. They have now ceased. He also remembers that when admitted he talked about seeing pleasant pictures, which he could see by looking at a wall. He is not troubled in that way now. Vision, near and distant, appears fair. Has not been troubled with disturbances of smell. Is able to distinguish test odours, separating the pleasant from the unpleasant. He thinks life is now worth living.

Physical condition : Weight has increased from 8 st. 11 lb. to 9 st. 10½ lb. Facial colour is much improved and the left nasolabial fold is less marked than on admission.

Blood pressure, on admission, 194/110 ; is now 176/110. The antral wash-outs at first brought away non-offensive greenish yellow pus, after the completion of dental treatment it was noted that the amount of discharge became much less and changed to greyish mucopus and is now a small amount of thin greyish mucus.

On December 13th, 1928 : He was sent out on a month's trial in the care of his wife.

On December 24th, 1928 : He attended the hospital for antral wash-out (only a little mucus) ; mental and physical condition remains satisfactory.

January 10th, 1929 : His doctor reports that he has no need of further mental hospital treatment. Visitor reports very satisfactory. Discharged from hospital books as "recovered."

April 2nd, 1929 : Reports he is well and at work.

April 17th, 1929 : Interviewed, appeared normal, sensible conversation, well dressed. No exaltation. Physically appeared satisfactory.

September 25th, 1929 : Visitor reported—Very well mentally and physically. His wife considered he was quite a different man to what he had been formerly. Is still at work.

January 16th, 1932 : Visitor reported—Interviewed patient and wife. Mental and physical condition very satisfactory. Sleep much improved. Appetite good. Weight steady. Has had no other illness. At steady work. His wife reported that as regards alcoholic indulgence he was very much better than before admission to mental hospital.

CASE 3.

M.744. C.U., male, single, labourer, aged 21 on admission on July 7th, 1928. First certification.

History.—Family : No psychotic history traced. Paternal : No record of nervous or physical disorder. Father healthy. Maternal : The mother and her entire family have suffered from chronic bronchitis, with death from heart failure in several instances. The mother and her sister are described as being highly strung and neurotic. In the present generation, one sister has frequent attacks of rhinitis and she realizes she is highly nervous and states she becomes confused very easily.

Personal.—Compiled from statements by relatives and himself on recovery. Shortly after birth he had measles. At seven years of age had whooping cough. Up to this time he was quite normal but afterwards never appeared to be in good health, there being chronic nose and throat disease ever since 1913. In 1914 he had an acute nasal infection associated with delirium with visual hallucinations ; he said he could see someone carrying a knife approaching his bedside. In June he had influenza. The general state for fourteen years has been one of a slow process in which he reflects the family tendency to chronic respiratory disease. His ill-health prevented him attending school continuously, so that he had reached only the fifth standard when he left school aged 14. He started work in a tube rolling mill. One of his duties was to assist in the dipping of metal in acid, thus he was constantly surrounded by irritant fumes which increased the frequency and severity of his nasal attacks. He then began to have severe headaches, frontal and bitemporal in location. They were worse at night and when in bright lights. They are described as a heavy dull pain and were associated with irritability and depression. They were relieved by exposure to cool moving air. He had post-nasal discharge in the mornings of a jelly-like consistency, and still more in the evening when he returned from work.

In 1927, he began to suffer with a mild sore throat, attacks of hoarseness and difficulty in breathing. In April, 1928, he complained of obnoxious smells and remarked that his nose appeared to be "stopped up." Moreover, the smells of the acid fumes persisted after he had returned home at night. During June, 1928, the post-nasal discharge ceased, the headaches increased in intensity and breathing through the nose

became very difficult. His sister says that he was feverish and had bouts of perspiration in the evenings. This was very marked during the week preceding admission to the mental hospital. During the last week he became restless and agitated, with periods of excitement and a gradually increasing confusion. He became very fearful, and was afraid to be alone and even to shut his eyes. Bad smells were constant and he had fleeting visions of people, most frequent when headaches were intense. He remembers buzzings in both ears preceding the onset of auditory hallucinations on the left side. It was reported on admission that: He was extremely confused and chattered incoherently. He imagined that everyone in the house was gasping for breath, and that he was at work last night when in fact he was in bed at home. His sister stated, he has been howling and raving and would not be left alone. He imagines that he is dying, also that he is going to live to be 150 and that he is giving his strength to other people. He talks at random and is crying continually.

On Admission.—He was pallid and sallow, the skin was dry and the conjunctivae muddy. The face was drawn and the eyes sunken and lustreless. Physically, he was very ill, although examination of the major viscera failed to reveal any gross abnormality. *Pyorrhoea alveolaris* was present, but no pus was seen in the nose or nasopharynx.

The mental picture was one of widespread and profound confusion. There was complete disorientation and it was impossible to understand what he was endeavouring to say. Restlessness and excitement increased and sedatives were only partially effective in producing sleep.

On the night of July 11th, he had a seizure which was in all its essentials a major epileptic seizure. Following this he became quieter and for several days subsequently the mental state did not alter. During the first week following admission he displayed sensory disturbances and motor signs. The sensory changes were widespread and were so extremely vivid that he was able to recollect and describe many of these experiences. He would, for hours, beckon to unseen objects and would enter into conversation with imaginary people, giving replies to questions which he thought he heard. On one occasion he felt himself floating away, losing all sensation of weight, and he thought he was ascending to the gates of heaven. During this period there were present a fixity of expression, staring eyes, mask-like face and the facial skin was drawn taut and furrowed. He had difficulty in swallowing and could not pronounce his words distinctly, slurring and running them together. Food was often retained in the mouth for some time before being swallowed. *Sialorrhoea* was present.

Limbs were spastic and movements were poorly controlled. He had ptosis of the left eyelid, overaction of the left frontalis with elevation of the left eyebrow, flattening of the left face and twitching of the muscles controlling the left palpebral fissure. He rolled his head from side to side. At times, during the first week, he had attacks of fear, crying out in his terror. He remembered these only vaguely after his recovery, although they were extremely intense at the time. Emotional outbursts of anger occurred, directed in a blind aimless way against anyone near him. He would attempt to bite and strike those in attendance upon him. For ten days he maintained a restless, confused, excitable state, and during the last three days his habits became faulty. On the tenth day two very septic lower molars were extracted. He then became quieter and passed into a stuporose catatonic state. For seventeen days he did not speak, except unintelligibly on very rare occasions.

On July 31st a septic upper premolar tooth was extracted. He then developed an attack of acute epigastric pain, radiating upwards over the praecordium. It was accompanied by nausea and vomiting, and suggested an acute abdominal condition, but was without demonstrable tenderness or rigidity. The temperature rose to 103° F. On the following day serous pericarditis could be diagnosed. Coincident with this his mental condition improved. He became brighter and conversed relatively rationally. The acute stage of the pericarditis lasted for ten days after which gradual absorption of the exudate took place. The improvement in the mental state was maintained except for a short period of confusion lasting four days from August 17th to August 20th.

At this time the ear, nose and throat surgeon reported the tonsils to be septic and an ulcer to be present on the upper pole of the right one. Pus was present on the post pharyngeal wall in a central position. The mucosa of the left mid turbinal was granular and septic, indicating either infection of left ethmoidal cells, or of the left maxillary antrum, or of both, and may be correlated with the left sided ptosis, the raising of the left eyebrow, the twitching around the left eye and the flattening of the left face. He continued, however, to be hallucinated, and at times mild confusion and mannerisms were present. His face had a fixed fatuous grin.

On September 8th there was recurrence of the pericardial signs with pain in the epigastrium. Fluid was present but less than before. His general physical condition

deteriorated, and mentally he became more confused. Injections of colloidal calcium oleate were given.

On September 16th the tonsils were removed by dissection. The right tonsil was enlarged, very friable and infiltrated with pus. The left was in a similar but more advanced condition. Extensive adenoidal pads were removed and the antra irrigated with antiseptic, macroscopic evidence of infection was not found. On the two days following the operation his mental condition showed improvement. He conversed freely, was brighter, less confused and showed a better appreciation of the instructions of his nurses.

On September 19th he again became very confused and restless, but rapidly improved during the following days, although a further period of mild confusion occurred from September 28th to October 1st. A course of colon irrigation was now given; at each irrigation mucopus was brought away, and associated with this treatment there was a mitigation of the confusion, although it never disappeared entirely during this period.

On November 2nd a sinus examination and irrigation was carried out by the ear, nose and throat surgeon. Both sphenoidal sinuses gave haemorrhagic returns and from the right one flakes of mucopus; this latter sinus was drained. There was pus in the left ethmoidal cells and in the left antrum. These were also drained. Following this operation his mental condition cleared rapidly, and within a fortnight his confusion had disappeared.

On Review.—December, 1928: He has a slight ptosis of the left upper eyelid, elevation of the left eyebrow and an inequality of the pupils, the left being slightly larger than the right. Following the sinus operation pus was obtained for a fortnight from the antral wash-outs, since then they have been clear. The motor phenomena have become quiescent and there is no evidence of sensory disorders. The heart shows hypertrophy and there is a mild degree of aortic insufficiency, but no evidence of pericardial adhesions. The tonsil beds are clean, the nose clear, but a mild granular pharyngitis is still present. His general appearance has improved remarkably. Complexion is clear, facial colour, mobility and tone much improved, his hands have lost their cyanotic appearance, and his weight has increased from 7 st. 8 lb. on admission to 8 st. 9 lb. at the present time.

At his relatives' request he was allowed out on trial to their care on December 13th, 1928; at the end of that period his doctor reported that he was no longer in need of mental hospital treatment; his relatives and the Visitor's reports were satisfactory, and he was discharged from the hospital books as recovered on January 10th, 1929.

January 17th, 1929: He attended on request at the mental hospital. Colour is good, no cyanosis in hands or face, pupils equal. Has not lost weight. No sensory disturbances, no headaches, no cardiac symptoms. Is sleeping well. No confusion, hallucinations or delusions.

April 24th, 1929: Visitor reported relatives stated his mental condition to be very satisfactory and that, as regards his physical state, he was doing well. Appetite and sleep were good. Weight had increased. During the recent epidemic of influenza he had three days in bed. He still has some nasal catarrh.

January 15th, 1932: Visitor reports on interview.—Mental and physical condition very satisfactory. Appetite and sleep good. Weight increasing, is now 9 st. 8 lb. Occasionally gets a dull frontal ache and still catches cold rather easily. Has had no other illness since discharge from hospital. Is a resident waiter at a college.

CASE 4.

F.162. A.Y., female, single, cook, aged 44 on admission to the mental hospital on October 10th, 1923. First certification.

History.—*Family*: No insane relatives.

Present Illness.—Symptoms of mental disorder had been noted developing for six months, becoming worse a week before admission, and necessitated certification. It was found then that she had a vacant facial appearance, talked incoherently, showed loss of memory and reasoning power, was the subject of illusions and delusions, heard "voices," saw imaginary persons and was careless as to her appearance, exposing herself freely. It was reported that she had become restless, wandering and finally uncontrollable. She had refused food, her habits and affections changed. She wanted to go about without any clothing, and after continually trying to leave the house, she eventually succeeded in jumping from a window, severely bruising herself in so doing.

Admission.—*Physical State*: General vitality very poor, feeble and frail. A large bruise over right iliac crest with abrasions on hip and abdomen caused an inability to walk without aid. Temperature, 97°F. Weight 7 st. 12 lb. Height 5 ft. 3 in. Sallow complexion. Left lobe of thyroid enlarged. Fibrillary contraction of pectorales. *Circulation*: Heart dilated; H.A.B. 5th space nipple line. Pulse 100.

B.P. 160/120. *Lungs*: A loose cough; expectorates freely. *Mouth*: Tongue densely furred, pyorrhoea, carious teeth and roots. *Nervous System*: Parkinsonian aspect. *Pupils*: Right larger than left. Both react to light, accommodation and consensual. Bilateral ptosis and proptosis. *Speech*: Difficult with labials. *Reflexes*: Superficial. Right absent, left dull. Deep present. Right K.J. and A.J. more active than left. Plantar response flexor. No clonus. *Sphincters*: No control. *Urine*: Slight trace albumen; acid, nil else. *Blood*: Wassermann negative. Widal negative to all groups.

Mental State.—Stuporose, apathetic and depressed. Impossible to obtain attention, generally unable to appreciate or reply to questions, such answers as were obtained to simple questions were monosyllabic, irrelevant or incorrect. Triple disorientation, completely confused, judgment and insight in abeyance. When left alone she appeared to answer "voices." Habits faulty. Refused food, had to be washed and spoon-fed. Non-co-operative, actively resists nursing attention and examination; observations were therefore made under considerable disadvantage. At night very restless, noisy and resistive to nursing.

Course.—She menstruated from October 11th, 1923, to October 16th. Flow rather excessive. The intensification of symptoms noted as worse for a week, admission was therefore coincident with the premenstrual phase. During menstruation she continued very confused, restless, and appeared determined on suicide. Refusal of food increased, and tube feeding had to be resorted to for several weeks. In a vague way she gave expression to ideas that she was "wicked," and that she had "a glass tube in her stomach." Gross carious teeth and roots were removed gradually owing to her feeble state. As winter developed, she became weaker, some oedema of the lower eyelids appeared. Pulse feeble, and continued rapid, rising to 110–112. Respirations 24. Temperature generally normal or subnormal. The pulmonary condition very strongly suggestive of tuberculosis. Purulent sputum, difficult to secure, was frequently examined, but no tubercle bacilli were found. She was still restless, wandering, confused, at times agitated, faulty in habits, generally requiring spoon feeding, non-co-operative, resistive to nursing. Midway through December, 1923, a septic rash appeared on the head, neck, face and forehead. Menstruation now, and during the remaining course of her illness, completely in abeyance. During January, 1924, she developed a carbuncle on the right shoulder. Pus therefrom yielded staphylococcus aureus. It was not until well into February that this healed. Albumen was present in the urine. Her weight fell to 5 st. 11½ lb., the restless state was then partly alleviated by bromide medication. During the remainder of 1924 her physical and mental state continued most unsatisfactory. Mentally she appeared completely demented, restless and agitated. Physically very feeble and frail, and almost constantly wet and dirty. Clinical and radiographic examination failed to account for the persistent cough.

In 1925 there was no essential change in her condition. She was agitated and depressed, with frequent attacks of lachrymation, and still appeared demented. In a vague, incoherent way she made statements, e.g., "Somebody gives me stuff to eat to make my head and hands twisted." "People stamp on me and make my leg sore." "Sometimes they inject stuff into me." "These people live sometimes in one place and sometimes in another." Her weight varied considerably, from 6 st. 1 lb. to 7 st. 6 lb. throughout 1925, although she was liberally treated with cod liver oil. During March, 1926, she developed a swelling of the right side of the face, which subsided during the course of a week. Faulty habits continued into 1926. During the remainder of 1926 she showed no improvement, her weight varying from 6 st. 5½ lb. to 7 st. 6 lb. Especially during the winter months her face showed a puffy cyanosed "waxy" or "varnished" appearance which, with the Parkinsonian aspect, produced a remarkable characteristic facies. Sialorrhoea was also present at this time. Although the Wassermann test was negative, the pupillary inequality suggested syphilis, and so, in the early part of 1927, she was treated with mercury perchloride and potassium iodide, but this had to be discontinued owing to the development of a severe left parotitis on March 14th. The lymph glands of the neck became swollen, there was an associated pyrexia of 100–102°F., pulse up to 100, cough, but no adventitious sounds in the chest, although dulness was elicited at both apices. Respirations 24, peripheral circulation cyanotic, oedema of both ankles, at times symptoms of collapse. It was gathered from her vague incoherencies that she had neuralgic pains. This condition did not subside until April. Her mental condition then showed no essential change, and she was still occasionally faulty in sphincter control. From thence onward, however, she gradually became less restless. Parkinsonism still in evidence, and she was still frail. Extract of thyroid and then of ovary were given from early May until early July, followed by tonics.

In August 1927, her weight rose to 7 st. 12 lb., equalling that on admission. At the end of September she was still depressed, agitated, triply disorientated, incapable of taking interest in her surroundings, unable to tell her age and showing marked mental retardation. She was quite content to be where she was. At the end of October and of November her weight was 8 st. 5 lb. She was now stronger than at any time since admission, and able to talk with some degree of coherence. It was gathered that occasionally she had headaches in the left frontal region. She showed a narrow left palpebral fissure and definite puffiness below both eyes and it was elicited that she had a sensation of fullness in the left nose. She was now able to tolerate the extraction for pyorrhoea of the five remaining teeth, upper incisors and canine on November 29th, 1927.

During the following December, she gained 14½ lb. She was now able to co-operate, owing to the improvement in her condition, in ear, nose and throat examination. Tonsils—slight hypertrophy—no sepsis. Turbinates—polypoidal degeneration of middle turbinates. Sinuses—on transillumination—both antra dim, both frontals equally dim. Injections of colloidal calcium cleate were given.

February 10th, 1928, under local anaesthesia, antral investigation showed definite thick pus in both antra. These were well irrigated. She was now better orientated and showed much more facial mobility and less puffiness.

February 24th, 1928, under general anaesthesia, a sinus examination showed: Both ethmoids—haemorrhagic returns. Antra—much pus—left. Nil—right. Bilateral antral intranasal drainage was performed, the bone was porotic—caries.

On March 23rd, 1928, as the antral openings showed a tendency to close, they were, under local anaesthesia, enlarged. Continuous colon irrigations and ultra-violet light were now given.

From now on she improved remarkably and continued to gain weight.

A Review during June, 1928, showed: Normal orientation, replies well to questions, no delusions, no hallucinations, conduct excellent, work good. Cheerful. Realizes she has been ill, and is now better, she feels "wonderfully well." Life is worth living. Appetite, sleep and bowel action good. Has no memory of the circumstances associated with her acute confusion, certification and admission. She does not remember having had influenza, but knows she had had "colds" before she broke down, as she soon got "colds" on exposure to "draughts" etc. Is now able to state that during her confusion, she suffered with "heavy" headaches, especially left frontal, but adds that she has not had a headache since the nose operation. Her nose now feels "clear." Facial colour and mobility much improved. Ankles not now swollen. Weight 9 st. 13 lb.

July, 1928: Discharged from the Hospital as recovered. A post was found for her, by the Almoner, as a cook in a private family.

September, 1928: She reported continued good health, and was happy and comfortable in her post.

January 1st, 1929: The Almoner called on her at her situation and reported that she was in remarkably good health, although pale. She stated that, apart from a slight cold she was then having, she never felt better, and that she was quite happy in her situation. To the Almoner she appeared happy, comfortable and clean. Her mistress stated she was fond of her, and would not like to lose her.

April 19th, 1929: The Almoner reported she saw her and found her in very good health, happy and comfortable and her mistress spoke very well of her. During the recent severe influenzal epidemic she kept quite well, and had not the slightest "cold," and since her discharge from the mental hospital has never felt in better health. The Almoner and her superior, the Relieving Officer, conclude that she has fully recovered.

October 15th, 1929: The Almoner reports she is doing well. She left her first place of employment and of her own initiative obtained another which is much better and improves her position.

January, 1932: Reports are still satisfactory.

CASE 5.

H.E.H., female, married, housewife, aged 36 on admission to mental hospital on March 6th, 1915. First certification.

Without insanity in the family, this woman developed a psychotic state, and was admitted to a mental hospital under certificate on March 6th, 1915.

She was discharged therefrom on September 29th, 1915, but on October 9th, 1915, she was again admitted to the same institution under certificate from which she was again discharged on April 22nd, 1916.

For about six weeks she was in the care of her husband at home, but on July 10th, 1916, resort had again to be had to certification to secure her admission to another

mental hospital for a state of confusion with excitement. This state was really a phase of exacerbation of the psychosis which had been manifest since 1915, but on this occasion she did not improve sufficiently later to warrant discharge. In 1918 she was transferred to a third mental hospital where she remained for ten years. Her psychosis during this time progressed so much, that the diagnosis of secondary dementia from mania appeared reasonable.

On March 20th, 1928, she was transferred to the Birmingham Mental Hospital.

On admission.—Her mental state was considered to be that of mild dementia with paranoid tendency; delusions of persecution and ideas of reference appeared to be the sole content of her mind. Her general health appeared to be fair. She was well nourished, weight 9 st. 9 lb., height 5 ft. Compensated mitral stenosis was present. There was considerable oral sepsis. The Wassermann test in the blood was negative.

Course and Treatment.—Gynaecological treatment was not found to be necessary. On March 30th, April 13th and 27th, May 11th and 25th, dental treatment was given and twenty-five extractions were made of diseased teeth and roots. No mental improvement appeared to follow and at the beginning of August her mental state was unchanged; she was noisy, quarrelsome, aggressive and foul mouthed with numerous childish, but unjustified complaints and futile persecutory ideas.

On August 27th, 28th and 29th, she had daily subcutaneous injections of 10 cc., colloidal calcium oleate. She was resistive to examination in general and it was impossible to obtain her co-operation in a nose and throat examination, so on August 29th under general anaesthesia an examination of the nose and throat was made. The findings were such that a bilateral antral exploration, Watson-Williams technique, was proceeded with. Pus was found in the left antrum, and this cavity was drained intranasally. The tonsils were found to be healthy. Convalescence from the operation was without event. Later she became more co-operative and accepted treatment by continuous colon irrigation and ultra violet light. By the beginning of December her mental state had improved so much that she was suitable for the convalescent bungalow where her improvement was continued.

Whereas formerly she had been restless, irritable and unable to interest herself, noisy and quarrelsome, she was now quietly behaved, composed, alert to, and so interested in her surroundings that she was able to do light and later full domestic work.

Progress was interrupted by menstrual reactions, but was otherwise continuous, and later these were less in evidence. She gained insight into her state and recognized she had been mentally ill.

Discharge.—Leave from the hospital in the care of relatives was followed by discharge on a two months' trial, at the end of which the reports were satisfactory, and she was discharged from the books as recovered on July 11th, 1929.

July 1931: Subsequent reports have been very satisfactory. She has been seen on several occasions, and on each has appeared well, was well dressed, quiet in speech and manner, and with no evidence of her former behaviour. Her management of her home appeared to be equally satisfactory.

GROUP 2.—Cases in which Treatment by mild Non-Specific Agents combined with surgical Treatment of Foci was ineffective to induce recovery. Treatment by the more potent Non-Specific Protein Therapy was also required when removal or drainage of the Foci had been effected.

Reference is made to six cases to illustrate this group.

In the cases to be described in this second group, there was no semblance of the appearance of mental recovery until the more potent non-specific protein therapy had followed the application of mild non-specific therapy and surgical treatment.

In Case 6, a female of 31 years, a state of severe confusion appeared and continued after a phase of depression associated with rheumatism. In relation to this disease, salicylates rather than the causal infective process have been frequently held responsible for the appearance of mental disturbances. In this case, if salicylates had been given before admission to mental hospital, after such admission salicylate treatment was not employed but the mental state continued.

Septic foci were then removed and drained but improvement was inappreciable. Non-specific protein therapy was then given, but on account of her debilitated state this had to be done in two stages. It

was only after completion of the second stage of this therapy that recovery ensued. In Case 7, a male of 46, there is a history of repeated attacks of influenza each leaving the patient in a more debilitated and depressed state.

Considerable metabolic disorder was associated with the acute phase necessitating admission to mental hospital. Some diminution in the acuity of symptoms followed the use of mild non-specific therapy and the removal and drainage of nasopharyngeal foci of sepsis. Recovery, however, only occurred after non-specific protein therapy. This had to be given in two stages. The pyrexial response to the first course was poor but improved later with the second course.

The recovery attained appears to be very substantial.

It might be urged that in some of these cases the non-specific protein therapy was superfluous, and if no such active treatment were pursued the surgical removal of foci alone would bring about recovery.

The next case, viz., Case 8, has been included to deal with that point. Here three and a half years elapsed between the removal of septic foci and the administration of the potent non-specific protein therapy which was followed by substantial recovery. There was little doubt in this case that the T.A.B. therapy was the decisive factor in his recovery. He himself was so convinced on this matter that he expressed his regret, on the occasion of his discharge from mental hospital, that it had not been applied earlier in his case.

Such a case emphasizes the importance of the application of the powerful non-specific protein therapy to every case where it is possible to apply it after removal of sepsis.

Cases 9, 10, and 11 are three further cases illustrating the use of the pyrogenic therapies, T.A.B. vaccine, and colloidal sulphur, after local surgical treatment of sepsis.

In Cases 9 and 11, there are histories indicative of the development of the chronic infective process in the nose and throat since childhood.

In Case 10, the history of sepsis is of shorter duration, but it is probable it was present in latent form for a much longer period.

In the Report of the Board of Control for 1930, Part II, p. 36, a case, R.H.T., is described where a gonorrhoeal infection of the urethra was a complicating source of sepsis in a case where oronasopharyngeal sepsis was persistent and associated with a melancholic state. Local treatment of the sepsis was ineffectual in relieving the emotional disorder. Recovery, however, followed the use of non-specific protein therapy.

CASE 6.

M.H., female, married, housewife, aged 31 on admission to mental hospital on October 17th, 1929. First certification.

History.—Family: No insanity in family. Father, aged 33, and mother aged 29 at birth of patient. Mother alive and well. Father, goitrous, died of cancer. A brother and sister, older than patient, alive and well. *Personal:* "Nervous" as a child. School from 5-14, leaving in Standard VI. Subsequently in only two situations, each of seven years, before marriage. Happily married. No children. Always shy and reserved, and subject to "quiet moods."

Present Illness.—In contrast to what was elicited later from the patient, the husband gave the following information. Prior to November, 1928, she had appeared to be in her usual health. She then complained of indigestion and consulted a doctor who diagnosed gastric influenza. Later rheumatism developed, with acute pains beginning in the back and extending all over the body, including the head, necessitating treatment in bed for fourteen weeks up to March, 1929. Seventeen teeth were extracted for caries and pyorrhoea and in the following summer she had a three weeks' course of brine baths at Droitwich. Her husband had noted that from about June, 1929, she had seemed more "vacant" than formerly and this symptom became intensified. She was slow in answering questions, and sleep was bad.

On September 30th, 1929, she was admitted to a general hospital on account of rheumatism and debility. Examination showed no abnormality in the nervous system,

nor in the thoracic or abdominal viscera. Urine Sp. Gr. 1026, acid, nil abnormal. Temperature and pulse were normal. She refused food and whilst generally quiet and taking no notice of anyone yet had "violent attacks of calling out." She was transferred to mental wards where these symptoms became worse.

She was noted as being very depressed, refusing to speak or to answer questions or to take food voluntarily. She later became restless, would not stay in bed, resisted all attempts to dress her, was violent and resistive to all nursing attention. She wandered about the ward naked, tore up several nightdresses, sheets and bed clothing, throwing them on the floor and crawled in a naked state about the floor, over and under the beds and even over the bed rails.

On October 17th, 1929, she was admitted to mental hospital.

On Admission.—Physical State: General appearance indicated poor health. Height 5 ft. 3 in. Weight 7 st. 6 lb. Temperature varying from 97.4° to 98.4°. Skin—Septic papular rash scattered about body and limbs. Lymph glands, not enlarged. Thyroid—Slight fulness appreciable on right side. Circulation—Heart—R.L.C.D., 3 cm. from midline; L.L.C.D., 10.5 cm. from midline. First sound abrupt at all areas. Pulse, 84, moderate tension. Peripheral circulation, poor, general pallor of skin, especially of face. No cyanosis. Blood pressure 138/90 mm. Hg. Lungs—Respiratory amplitude restricted. Percussion note impaired over right apex. No cough or sputum. Mouth and pharynx—Teeth, upper jaw edentulous, lower jaw, three molars in doubtful condition. Tonsils, enlarged and septic. Palate congested. Nervous system—Pupils, variable. At times right larger than left. Both react to light and accommodation. Bilateral ptosis. Eyeball movements normal. Reflexes—Superficial, brisk. Plantar response flexor. Deep, knee and ankle jerks, present and equal. No clonus. Anaesthesia, nil. Sphincters, active. Retains enemata. Some tremor of hands. Muscular system, averagely developed, poor tone. Abdomen, nil. No evidence of venereal disease. Urine, 1030, some pus, otherwise nil. Blood—Wassermann test, negative. Widal test, negative to all groups. Gynaecological examination—infantile, retroverted uterus, right ovary enlarged to one and half times normal size and apparently tender. Tubes normal.

Mental State.—Facial aspect variable, on the whole sullen and morose, alternating with expressions of fear and apprehension. Any variation indicative of pleasure completely absent. Can give no account of herself. No voluntary conversation. Attention, voluntary and instinctive very poor. Long latent period of response to questions. Completely disorientated. Memory of recent events poor. Replies, when obtained, monosyllabic. Retardation of association. Depressed. Refuses food, requires much patience with spoon feeding. Restless and agitated, rushes about ward, tears off clothing. Attacks nurses impulsively. Wet and dirty. Destructive to bedding.

Course and Treatment.—Alkaline drinks. Calcii Lactas and cod-liver oil and malt prescribed. Simple enemata daily.

October 25th: Dental examination; three septic molars in lower jaw extracted.

October 30th: Ear, nose and throat examination. Ears, normal. Nose, anterior rhinoscopy. Much crusting on both sides in the inferior turbinate region. Posterior rhinoscopy. Pus on both lateral pharyngeal walls. Sinuses—On transillumination. Antra, both dull, especially right. Frontals, dim. Tonsils—Much liquid pus, both enlarged.

November 2nd: Gynaecological examination. Local treatment prescribed, but patient resistive thereto.

November 8th: Dental examination. Remaining teeth appear fairly satisfactory. Taking food and medicines better, but enema required daily. Remains confused, agitated and depressed, at times impulsively violent getting out of bed and hitting anyone near her in an aimless way, otherwise remains in bed, huddled up, not speaking, displaying no interest in what goes on around her.

November 14th: Still variable and uncertain in conduct, most resistive to nursing, does not speak, very agitated, restless, pulling off clothing and tending to nudity. Menstruation in abeyance although on aloes and iron. Three injections of colloidal calcium oleate.

December 3rd: Mentally unchanged. Weight 7 st. 5 lb. Left limit of cardiac dullness 10 cm. Sounds abrupt. No murmurs.

December 4th: Under general anaesthesia. Sinus examination and irrigation. Sphenoids at 3½ in. clear. Ethmoids, clear. Antra—haemorrhagic returns. Both antra drained intranasally. Septic tonsils removed by dissection.

December 10th: Improved physically, taking food well, still resistive and restless, but there is less tendency to nudity and she stays in bed. Not destructive.

December 12th: Voluntarily used the commode, formerly had been very faulty.

December 31st: More composed, conversed a little, appeared interested in newspaper, recognised some of the pictures therein. Still very depressed.

January 13th-19th, 1930 : A course of non-specific protein therapy using T.A.B. vaccine. First three injections intramuscularly, viz. :

January 13th : 0.3 cc., rise to 98.6°.

January 14th : 0.5 cc. no rise.

January 15th : 1.0 cc., rise to 98.8°, on the following day to 99.4°.

January 19th : 0.05 cc., intravenous, vomiting, gradual rise to 102° during the first twelve hours, fall to 98.6°, secondary rise to 100° and fall to 98°. The whole pyrexial period lasted 40 hours, maximum pulse 102.

January 30th : Although depressed and quickly showing fear and agitation she was now definitely becoming more composed. Clothing destruction and nudity, formerly marked and continuous features, had become more intermittent, but from this time now ceased. Facial colour improving. Weight 7 st. 6 lb. Menstruation in abeyance.

February 20th : Menstruated for a few hours only. Depression continued, but variable in its intensity. On some occasions more so, and then asserted that her body "smelt" and she was "rotten." The cutaneous sepsis had now become more marked on the face, more papules appearing and becoming pustular.

A course of five injections was given, 1 cc. rising to 3 cc. of collosol manganese, one injection weekly, from March 13th to April 10th.

Gradually following this course the facial sepsis showed considerable improvement.

Her weight at the end of March rose to 8 st. 2 lb. She was still very variable, occasionally volunteering a few words of conversation, principally that she wanted to go home. Incapable of voluntary active movement to a useful end, lacking in capacity to concentrate, she had the appearance of tiredness and fatigue. Facial aspect and carriage lacked vivacity. Local gynaecological treatment was now possible.

April 16th : Able to keep dressed in her own clothing, less agitated, appears to be losing delusions of unworthiness. No evidence of hallucination. Does a little simple work. Taking some interest in her surroundings and mixes with other patients and volunteers a little conversation. Eats and sleeps well, and is clean and tidy in appearance.

April 20th : Slight retrogression. Depressed and miserable, back to the stage in which she says she is "rotten and would be better dead." This relapse is probably moliminal. During May and June she was sufficiently amenable to accept a course of ultra violet light. She continued, however, still variable and although her weight at the end of the month of May was 8 st. 12 lb., she appeared at a standstill.

From June 3rd-14th : A second course of T.A.B. was given using intravenous injections.

June 3rd : 100 million, rise to 101.6° within 6 hours, fall to normal and secondary rise during the 8th to 12th hours to 103.2°, fall to normal by the 24th hour, followed by another rise to 101° by the 30th hour, then fall to normal at the 36th hour. Maximum pulse 112.

June 5th : 150 million, rise to 103.8°, preceded by rigor, fall to 100.8°, rise 102.6°, then fall to normal. Pyrexial period 24 hours. Pulse maximum 130.

June 6th : 200 million, following rigor and vomiting rise to 104.8°, fall to normal. Pyrexial period 10 hours. Pulse maximum 128.

June 8th : 250 million, no rigor, rise to 102.6°. Pyrexial period 20 hours. Pulse maximum 110.

June 10th : 350 million, rigor, rise to 102.2°. Pyrexial period 12 hours. Pulse 100.

June 13th : 500 million, 103°, 12 hours, pulse 112.

June 14th : 750 million, rigor, 102.8°, 12 hours, pulse 106. It was elicited that the T.A.B. caused severe headaches.

June 16th : A little more cheerful objectively, but still gives expression to her ideas of unworthiness.

June 19th : Converses more freely and cheerfully. Voluntarily does a little work in the ward.

June 22nd : A marked change since the T.A.B. course. Decidedly more cheerful.

June 28th : Daily improvement noted, increasing alertness. Especially noticeable since the T.A.B. is a more erect carriage and elasticity of gait and tidiness of clothes. A very marked improvement in facial tone and complexion. Works voluntarily. Displays a friendly attitude towards staff and patients. No fear or apprehension displayed. On parole for a few hours. Menstruation in abeyance. Antral washouts clear.

July 11th : Weight 8 st. 8 lb. Progress continues. Husband writes, after taking her out on parole, that he notes a vast improvement in her condition.

July 17th-23rd : Catamenia. Flow rather profuse at onset, then became normal. Slight abdominal pain. No mental disturbance associated. Greatly improved, cheerful animated expression, smiles readily. States she feels she is "waking up." Sleeps and eats well.

August 1st: Review. Mouth, ear, nose and throat—satisfactory. Skin, septic papulo-pustular rash disappeared. Circulation—Heart, R.L.C.D., 3 cm., L.L.C.D., 9.5 cm. Sounds fair. B.P. 120/86 mm. Hg. Pulse much improved.

Peripheral. Facial colour very much improved. Thyroid enlargement not obvious. Joint and muscular system. Facial tone and mobility remarkable improvement. A ready smile, a dimple in cheeks and twinkle in her eyes. Voice much stronger and sustained. Carriage upright, gait brisk and active in movement. No evidence of rheumatism.

General nutrition. Plump, weight 9 st. 6 lb. Nervous system—pupils equal, stable, normal reactions. Urine, acid 1026. Nil abnormal.

Her husband reports that he considers her to be in better physical and mental health than he has ever known her. She has never been so cheerful and well. Formerly, he says, she was fearful and shy at meeting strangers, and showed marked reserve; now, when out on leave, she meets people with more confidence than before her illness.

In general appearance *she is not recognisable as the same person as on admission*. She displays no evidence of fear, and there is a normal emotional facial variation in conversation. Completely composed, her attention, concentration and interest are good. She is able to describe her feelings and sensations, and her replies to questions are given briskly and are completely relevant, concise and complete. She volunteers information to make points more clear.

Well orientated. She realizes she has been ill mentally and physically and that she needed mental hospital treatment, and she is glad she came. She volunteers that she once thought she was hopeless, and would never get right again. Now she feels she is well, and is not worrying about having been here, because she knows she is well. She confirms the facts given in the history and is able to supplement them by the description of her sensations and feelings. She remembers going to the other hospitals, but the memory of her admission to the mental hospital is not clear. She volunteers that she had been in "a nervous state" for three years before admission (since 1927) gradually getting worse, she became more nervous in the latter part of 1928, the slightest disturbance upset her. Then came the gastric influenza, without temperature, followed by acute muscular and synovial rheumatism with pyrexia, and her hands became swollen.

Depression came on in February, 1929, and persisted after the treatment for the acute rheumatism had ceased. The depression grew worse. After the subsidence of the acute rheumatic symptoms she was advised by her doctor to have her teeth removed, two at a time, and later to have her tonsils removed. She decided to have as many teeth out as possible at one sitting, and seventeen were extracted at one operation under gas.

She had noted a nasty taste in the mouth in 1928, but after the mouth healed, this disappeared. Depression continued and became worse after the brine bath treatment. She wanted to go to a hospital, she wanted to go somewhere for as she felt, she could not make the effort to speak to anyone, was lacking in energy, could not do her work and was easily fatigued. She felt life was not worth living and everything seemed against her. She was apathetic, nothing interested her, and she had not enough energy to be irritable with herself. She could not sleep and could not eat.

She feels very much stronger now and able to do her work. Life is now very much worth living. The depression, fear and nervousness have passed away, and she is not afraid of people. She sleeps well now, and is not troubled with dreams. She volunteers that her especial weakness for years has been a relaxed throat and a feeling of catarrh at the back of the nose.

She remembers her tonsils being operated on at a hospital when she was ten years old. She has not had quinsies, but she has been subject to colds every winter with a sensation of definite nasal obstruction. Four years ago she went to a doctor on account of the nasal catarrh, and had "lotions" for the nose. For three years, and gradually getting worse, she was much troubled with unpleasant smells, which she now realizes came from her nose and throat, worse during menstruation. The smell was not foul, but a "gassy" odour. The unpleasant taste and odour were associated but the odour persisted after the teeth came out. The odour has gone and *was only slightly noticeable at the last menstruation*.

Examined with the test odours she names most, recognizes they are all different, and separates the pleasant from the unpleasant.

Before admission she had been losing the capacity to appreciate the flavour of foods. This has now returned. She enjoys her food and her appetite is good. She volunteers that *after the second course of T.A.B. her vision was much improved* as compared with that obtaining at the time of the brine bath treatment. After the rheumatic fever she was troubled with black spots moving up and down. They only appear very occasionally now, and do not interfere with reading or sewing. She has

never worn glasses, and now she can, and does, read small print without blurring or discomfort.

She has not been troubled with "voices" or tinnitus, even during the rheumatic period.

Coupled with the nervousness she had *pains in the head and frontal headaches*. These became worse during the rheumatic fever, and they continued until admission to the mental hospital.

The T.A.B. caused pain "all over," in the back and all over the head. It made the old headache and pains worse, but a fortnight after the completion of the course the old headache and pains disappeared completely, and did not return, even at menstruation. For five years she had been troubled with indigestion, pain in chest and upper abdomen, worse after food. Consequently she restricted her diet. She is not now so troubled, and her consumption of food gives no indication of diet restriction through pain.

August 7th, 1930: Discharged recovered.

August 24th: Her doctor writes: *I was pleased and astounded to note her complete recovery*. She has an intelligent appearance, and looks strong and healthy. She is calm and bright, and has lost the puffy appearance and her nervous agitation.

July 9th, 1931: Her husband reports she is quite well mentally and physically, and expects to be confined shortly.

CASE 7.

A.W., male, married. Chocolate grinder. Aged 46 on admission to mental hospital on January 24th, 1929. First certification.

History.—Family: No insane relatives known. Wife has had neither miscarriages nor abortions. One boy, living. *Personal*.—Has since 1909 (except for War Service) been employed by the same firm. From about that time his teeth became carious and septic, but he had neither toothache nor neuralgia, and in 1911 they were all removed. In France during the War, became a corporal; no injuries. Good health except an attack of influenza during the pandemic, but without complications or apparent sequelae. In 1921 had an attack of influenza: four weeks in bed and six weeks convalescing. Early in 1927 had a severe attack of influenza, from which recovery was slow; he became depressed, lost interest, and sat for hours without speaking. This post-influenzal state continued for six weeks. He then gradually improved and was able to return to work. In August, 1927, he appeared to be in robust health. Early in 1928 he had "a cold," went to his doctor, was somewhat depressed and weak afterwards, but picked up again. In August, 1928, he was in apparent good health, but less robust and virile than in the previous year. In the following month, September, without any precedent evidence of an acute respiratory tract infection, he began to break down, becoming depressed, unsociable, lacked interest and energy, became tired easily and displayed no enthusiasm for anything. Although restless, his activities were vague and lacked definite purpose. He was unable to concentrate on, and was incapable of work. He complained of cold, had hot-water bottles, shivered as he lay in bed, but had no pyrexial reaction. He slept badly, appetite was poor both at home and in a convalescent home to which he went for a short time. He lost between two to three stones in weight, his thin condition was the subject of his "worry." According to his wife's observations, he does not appear to have experienced disturbances of the special senses or of common sensation, and there was no evidence of anterior or posterior nasal discharge. He went into a hospital without any improvement accruing. In the early part of December he was able to make an effort at returning to work, but was unable to continue. After Christmas, 1928, his condition became much worse, and early in January, 1929, he went into hospital again. It was found that he was very depressed, restless, agitated and worried, his few utterances were those of fear concerning his physical condition. He also stated that he was not fit to live because he had not done anything right in his life, and deserved to be cut to pieces and burnt in bits. He was convinced that he was going to die immediately, and was going to have a visit from the Devil. He was admitted to the mental hospital on January 24th, 1929.

On Admission.—Mental State: Complete disorientation, depression, fearful, with rigid resistance to feeding, nursing and treatment. Sullen and morose, his few but low-muttered disjointed utterances were that he had "a growth inside," and he showed his wasted arms as evidence of his view as to the cause of his condition and the futility of treatment. Conversation could not be directed to any other topic. Reassurances were useless. There was no evidence of sensory disturbances. Judgment and insight were in abeyance.

Physical State.—Height 5 ft. 2½ in. Weight 8 st. 10 lb. Temperature 97·2° F. Pulse 76. There was evidence of considerable loss of nutrition, and he was not

recognizable as the same person as that in the photographs his wife supplied. There was loss of fat in the temples and cheeks, and from a similar cause the eyeballs had receded. Facial mobility and tone were lost; owing to lower lid ptosis the sclerotics were visible below the corneae, but upper lid ptosis was compensated by forehead wrinkling. The cranial nerves appeared normal, but the head was tilted to the right. The deep reflexes were increased equally, the plantar response was flexor. Sphincters were under control. As far as his resistance permitted examination there was no evidence found of disease in the thoracic and abdominal viscera. Urine was normal, and the Wassermann and Widal tests of the blood were negative.

Course and Treatment.—Resistiveness continued, spoon-feeding was required. An attempt at colon irrigation was unsuccessful, but on February 6th ear, nose and throat examination evoked less resistiveness, and there was found: Ears—both drums retracted. Nose—anterior rhinoscopy. Crusting on septum and floor of left nose. Some injection of mucosa of septum and left inferior turbinate. Right side clear. Posterior rhinoscopy. Injection of roof of pharynx. Eustachian openings clear. Thickened mucosa both sides of septum. Nasal sinuses. On transillumination. Frontals: Right, dull; left, dim. Antra, neither clear, right dimmer than left. Nasopharynx. Anterior pillars injected. Moist granular pharyngitis. Tonsils—septic, pus in left. Radiographic examination of jaws for buried roots or unerupted teeth showed no residual foci, but there was marked irregular thickening of the alveolar margins. Resistiveness to treatment continued: in a whining voice he asked to be left alone to die of “the growth in the inside.” At times he impulsively struck in a feeble way at the male nurses when spoon-feeding or attempts at treatment were made. Weight had fallen to 8 st. 5 lb. He was given injections of colloidal calcium oleate.

On February 25th under general anaesthesia. On examination of the nose the mucosa was found to be normal, although there was then prevalent an epidemic of influenza. Sinus examination and irrigation. Sphenoids. Both at 4 in. Right, much thick mucopus; left, nil. Ethmoids—some osteosclerosis; no exudate. Antra—right, some mucopus; left, more mucopus. Intranasal drainage of right sphenoid and both antra. Removal by dissection of septic tonsils. On the night of the operation temperature rose to 100.6° , on the following day to 101.4° , and on the next day to 102.2° , thereafter falling to normal. Convalescence was uneventful. By March 12th his condition and appearance had improved considerably on that on admission. Confusion had cleared, and although depressed, he was more composed and took food better. The daily antral irrigations brought away masses of mucopus. At the end of March his weight had risen to 8 st. 12 lb., and facial colour and tone had improved. Conversation was never voluntary, replies were monosyllabic but less was heard of “the growth in the inside.”

He still refused colon irrigation, although he permitted antral irrigations and accepted medicines by mouth.

A course of non-specific protein therapy was now given, using T.A.B. vaccine.

On April 4th, 8th, and 11th, 300, 350, and 500 million were given intramuscularly without evoking a rise of temperature or other obvious reaction.

On April 15th, 300 million, intravenously, no reaction was observed, temperature did not rise above 98° .

On April 20th, 350 million, intravenously. Maximum pyrexia 99.8° in five hours, falling to normal during the next five hours. No other reaction.

On April 25th, 500 million, intravenously. Maximum rise to 99° . Rise and fall to normal within eight hours. On account of the poor pyrexial reactions further treatment by this means was suspended.

In the intervals between these injections he accepted colon irrigations without resistance, and large masses of mucopus were brought away. It was noted that following this combined treatment the amount of mucopus obtained on antral irrigation showed diminution, and at the end of the month there were two days in which these returns were clear. He was now feeding himself, and weight had risen to 9 st.

By the end of May the returns from colon irrigations were clear. A course of ultra violet light was given during the end of April, and continued during May.

The amount of mucopus in the returns from the antral irrigations, though small, varied, increasing and diminishing in cycles, but, on the whole, gradually diminishing, and by the end of July the returns were continuously clear.

During June another course of T.A.B. vaccine was given intravenously and better pyrexial responses were evoked than on the previous occasion.

June 10th, 250 million, caused a rise of temperature to 102.6° returning to normal within 14 hours of initial rise.

June 11th, 350 million, evoked a rise to 103° , preceded by a rigor, fall to normal within 12 hours.

June 13th, 500 million, rise to 101° , fall to normal within 12 hours,

June 17th, 750 million, rise to 99.8° .

June 18th, 1,250 million, rise to 101.8° , fall within 12 hours.

June 21st, 2,500 million, rise to 102° , preceded by rigor, fall to normal within eight hours of initial rise.

He was now given elixir pituitary—whole gland extract. At the end of July his weight was 10 st. 1 lb., and although depressed and morbidly introspective, he was able to do a little ward work, but his muscle tone and strength were still poor and feeble.

During August he improved sufficiently to go out on leave with his friends, and later week-end leave was granted. He was slowly gaining strength, and able to do a little light work in the gardens, but lacked initiative and real vigour. At the end of September his weight was 10 st. 8 lb.

Review. Early in October, 1929. Although now fully orientated, he has no memory of the climax of the present illness, of going to the first hospital or of admission here. He has no memory of what he said on admission, nor does he appear to remember the attack of influenza in 1927 and its sequel. On the other hand, he remembers the other attacks of influenza and the bad "cold" he had in 1928 and succeeding depression. It would appear that, like the climax of the present attack, the illness in 1927 was associated with a state of confusion. He remembers the onset of the present attack, the feelings of depression, of general weakness and loss of appetite and energy, but is unable to account for their appearance. He considers he is much better now than at the corresponding period of last year. Life is now worth living, and although he feels hardly fit for full work at present, he thinks he would be able to do light work.

He volunteered that the nose and throat operation has removed a recurring feeling of nasal obstruction he formerly experienced. Otherwise, as far as he can remember, he has not been troubled throughout his illness with disturbances of the special senses, nor headache nor neuralgia. Examined with the test odours, he recognizes they are different substances, and he can separate the pleasant from the unpleasant correctly.

His appetite is now good. He denies experience of any abdominal pain as the basis of his former idea that he had "a growth inside." This delusion, which has quite disappeared, appears to have been based only on the fact that he had lost flesh.

Discharge.—Discharged from the mental hospital on October 10th, 1929, after a month's sick leave he was able to return to work, at first light duty and later full work. His doctor on several occasions has been good enough to report on his progress. By March, 1930, he was doing his usual work without fatigue, eating and sleeping well, and was gaining weight, 11 st. 4 lb.

In October, 1930, he was doing full-time work on a grinding machine, no light task. He has filled out considerably.

July 23rd, 1931. His doctor reports—He is in excellent health and spirits. He weighs 13 st. 6 lb. He is doing heavy work, and takes his turn on the night shift, month and month about. To quote his foreman: "He is working fine."

CASE 8.

H.H.W., male, schoolmaster, married. Aged 35 on admission to mental hospital. July, 1914. First certification.

A man of passionate temperament, irritable and quarrelsome, without insane relatives. On one occasion he had made a violent attack during school on his headmaster on account of some trivial circumstance. In 1911 he attempted suicide by cutting his throat and also by jumping out of a window. At home his emotional instability resulted in domestic discord. His height, 5 ft. $10\frac{1}{2}$ in., and powerful build rendered him a danger when he lost self-control.

In July, 1914, psychotic symptoms so affected conduct that he had to be placed under certificate in a mental hospital, from which he was discharged on May 7th, 1915, to the care of his brother, who took him to another part of the country, County X. The psychotic state, however, continued, becoming progressively worse after the following Christmas until, on April 18th, 1916, conduct became so affected that certification and admission to a mental hospital in County X were necessary.

The psychosis continued, and he was later transferred to the first mental hospital, and after a period of residence there, to a third mental hospital from which he was transferred on August 1st, 1922, to the Birmingham Mental Hospital. On admission his psychosis was classified as paraphrenia, and considering its duration a hopeless prognosis attached. A left divergent squint was present and the heart sounds were weak, but otherwise examination failed to find any signs of organic disease in the major viscera. The Wassermann test was negative in the blood. There was some oral sepsis.

Course and Treatment.—Four dental extractions were made for caries. Glycero-phosphates and liquid paraffin were prescribed. He accepted these agents in the usual

way, recognizing them as medicines given for his benefit. He nevertheless soon began to include the medical and nursing staffs of this, the fourth, mental hospital in the system of persecutory delusions which he had evolved, and although accepting medicines from them, alleged that they "put things" into his food with intent to injure him physically in order to provide a reason for his detention. His emotional instability showed periods of exacerbation, irregular in their incidence and severity. On these occasions he was extremely irritable, restless, aggressive and deluded, and sometimes actually striking those around him. It was noticeable that his victims were generally patients who were older and more feeble than himself, and he generally struck when responsible witnesses were unable to observe him. When remonstrated with for acting in this manner towards those who could have done him no injury, he rationalized the actions by making futile allegations concerning his victims and his alleged illegal detention. On the occasion of these exacerbations there was always a very obvious exacerbation of the left divergent squint. Thus during 1922 and the first half of 1923 he showed no change in conduct or mentation. Dental examination had suggested on a conservative basis that the remaining teeth were satisfactory. During one of his more amenable periods it was possible to examine his jaws radiographically, when it was found that there was extensive chronic periodontitis present, with granulomata at the apex of several clinically apparently sound teeth.

On August 17th, 1923, twenty-two teeth were extracted under general anaesthesia. After this it was noticeable that he was a less unpleasant person to those around him, less excitable and ceased endeavouring to injure other patients. At the same time he still retained, without exception, every one of his delusional ideas. There was, however, a reduction in the intensity of the emotional and conduct disturbances, these and his pathological irritability and anger were diminished. In January, 1924, an ear, nose and throat examination was made. Streptococci were isolated from the septic tonsils. On April 15th the tonsils were removed by dissection by Mr. F. D. Marsh, F.R.C.S. From this operation he made a good recovery, and for a short time his mental condition improved considerably; it then relapsed, but not to the condition prior to the tonsillectomy. This relapse lasted until 1927, although medicinal treatment by tonics, thyroid, etc., was employed during this period.

In October of 1927 he was given a course of non-specific protein therapy, using T.A.B. vaccine. Following an intramuscular injection, he received seven injections intravenously on every second or third day between October 20th and November 4th. The therapy was successfully effected, herpes appeared around the lips, and towards the end of the course some diarrhoea. Colon irrigations were now given.

On January 27th, 1928, Mr. W. S. Adams, F.R.C.S., carried out a Watson-Williams investigation of the nasal sinuses under local anaesthesia. Changes were found in the mucosa of all the sinuses and exudate in both antra. These were irrigated with solution of biniodid of mercury. Colon irrigations were continued. Following this treatment he made a further substantial improvement mentally and physically, and it was noticeable that the left squint was now less extreme than it had been formerly.

He was now able to work at and to concentrate on book work. He realized he had been ill mentally, and was emphatic in his opinion that the turning point in his treatment had been the T.A.B. therapy. He was discharged recovered on May 11th, 1928. He returned to his home in County X, and applied for work under the Education authority of that county; after a period of probation on the temporary staff he is now on the established staff. In contrast to the attitude displayed whilst he was ill, he writes to and visits the medical and male nursing staffs of the mental hospital, and expresses his gratitude for the treatment which made him well.

CASE 9.

6989.—G.Y.W., male. Commercial traveller. Single. Aged 26 on admission on February 6th, 1928. Second certification.

History.—Family: Not psychotic, no "nervous breakdowns." *Personal* (given by his mother). Thought to be premature, but was fully developed at birth, although weight was only 5 lb. Subsequent growth and development satisfactory. As a child did not sleep well, talking and gnashing his teeth in his sleep. Breathing through nose always difficult, especially noticeable when eating; an awkward feeder. Whooping cough at four, slight attack of measles at six. No serious sequelae except that twice each year he was confined to bed for a few days with a cold and high temperature. At grammar school he worked well, but worried so much about his studies that he was not allowed to take a matriculation examination. In 1918, confined to bed with "Spanish" influenza for fourteen days, temperature of 103° to 104°, very ill, delirious and muttering; very constipated. For some time after the subsidence of the febrile state was very debilitated, gradually regained strength, but continued with the annual colds and temperatures.

In the early part of 1923 developed a rash, which lasted for a fortnight, on his forehead labelled "shingles"; it commenced as small, hard papules which became haemorrhagic and purulent. It involved the temples and forehead, but did not affect the eyes, the rest of the face, nor the hair.

In 1924 usual "colds" and "temperatures."

In 1925, during January, usual cold and temperature, but from this time he began to show a change in his conduct. Slight exaltation had always been a characteristic, but this was intensified and he became very erratic. He bought unnecessary and extravagant articles, e.g., a gun, which he fired across the public highway—police proceedings and a fine resulting. He became infatuated with a married woman living apart from her husband. His conduct was "futile, erratic and idiotic in the extreme," he also neglected his business. He became confused, wandered off from home, and was found by the police. On examination he was found to be very excitable, restless, talkative, inconsequent and unable to concentrate; his memory was very poor. He said he had to go and look after a girl, but he did not know whether he was married to her or not; he thought he might have got married and forgotten about it. He could not remember the girl's name. He stated there was opium in the house, and that he had been attempting to counteract it with boric acid.

His mother reported that he had been wandering about at night under the delusion that he was married, and hunting for his wife, was very talkative, talking rubbish. He said he was a relative of the Royal Family. His brother reported that at times he says he is the Prince of Wales, that his food is poisoned, that he is married, and soon after that he is not married.

He was sent to a mental hospital (in October, 1926), whose Medical Superintendent has kindly supplied the following information: He was in a hypomaniacal condition, very loquacious, exalted and deluded. He stated that the Russian Soviet had definitely tried to kill him by hypnotism because they recognized that he had the power to read their thoughts and thereby counter their evil machinations, that by means of eggs and other substances preserved in boracic which were being sent from China the Soviet were able to render the population of this country more susceptible to their evil hypnotic influences, that on two occasions when he went to the — Hotel it was full of Soviet agents, and that when they recognized that he read their thoughts they attempted to kill him by hypnotism. Whilst in the mental hospital his general health improved considerably, but with little improvement of his mental condition. Although in the hospital he was well conducted and took interest in his surroundings, he continued exalted, loquacious, and retained the same delusions. Against advice, he was removed by his mother from the mental hospital on November 16th, 1926. She states he reverted to his former erratic conduct and continued in his foolish infatuation.

Eventually a repetition of similar conduct and more intense symptoms necessitated certification and admission to the Birmingham Mental Hospital on February 6th, 1928. It was reported that he was wandering in the road and went into a house where he said he was looking for two dogs. He went upstairs to a bedroom and would not go therefrom. Police assistance was required. On examination he showed evidence of confusion and hallucinations. He rambled in conversation and gave foolish and inapposite answers to questions. He talked about having been married when he was sixteen and having been looking for his wife yesterday and of being colour blind. He chattered about colour of eyes and hair in a senseless way and did not know whether it was morning or evening. He stripped himself naked and gave as the reasons that there was "some influence, some smell."

On Admission.—Mental State: Confusion and restlessness with vivid hallucinations of hearing, taste, smell and vision. He was puzzled, suspicious, antagonistic and resentful. Voluntary attention poor, disturbed by hallucinations. Impulsively violent, resistive to examination and nursing attention. Judgment and insight in abeyance. Exalted, he stated "I'm ———, one man in two. I can be either H, or myself." "Voices" by day and night told him to undress. He stated that Mussolini, the whole Royal Family, Henry Ford and Rasputin were all in the building and talked to him. He said the birds whistling outside were talking to him. He stated he had drugs and blood in his mouth and that he was poisoned with ether, chloroform and opium. He talked about colour vision, made the "sign of the cross" in front of his face saying that this movement was "to ward off the evil eye." He continually rubbed his head, muttered apparently in reply to hallucinations and asserted he was hypnotized.

Physical State.—Height 5 ft. 10 in. Weight 10 st. 2 lb. Temperature 98.6°. Apparently in fair general health, well nourished and well and symmetrically developed. No active disease detected in major viscera. Facial skin showed dilated vessels giving a streaky appearance. Some occasional twitching of facial muscles. Skin healthy. Circulation. Heart, limits normal, sounds soft but pure, regular rhythm. Pulse 88. B.P. 148/90 recumbent. Lungs normal, respirations 20. Tongue coated. Gums normal.

Soft palate congested. Teeth—many stopped. Radiogram showed multiple metallic fillings with periodontal thickening and periapical shadows. Nervous system.—Pupils equal, reacted to light and accommodation. Hearing apparently normal. Superficial reflexes hyperactive but equal. Arm jerks present and equal. No clonus. Sphincters controlled. Tremor of fingers. Muscularity, well developed, tone good. Urine 1026, acid, mucus, no abnormal constituents. Blood, Wassermann test negative. Widal test negative to all groups.

Course and Treatment.—Associated with a course of colon lavage the intensity of his acute symptoms subsided.

March 9th : Under general anaesthesia extraction of five septic filled teeth.

March 21st : Ear, nose and throat examination. He informed the Surgeon that he could smell tetra-ethyl of lead. Nose—anterior rhinoscopy. Appears perfectly healthy but the right side is paler than the left. Posterior rhinoscopy. Enlargement of posterior ends of both inferior turbinates, polypoidal degeneration on left posterior edge of septum. Pharynx—marked granular pharyngitis. Tonsils—Large quantity of pus in right tonsil, none in left. Ears—normal. Nasal sinuses—transillumination. Frontals and antra quite dull. During March he was restless and rambling in conversation, said that strangely sweet smells are emanating from "S" (another patient); he heard "voices" calling him "bastard," had persecutory ideas regarding "S," smashed "S's" pipe. Confused, wandered aimlessly about, stripped himself in the ward. Interfered with other patients, said his body was full of poison. Except for one night during this month he slept satisfactorily. By the end of March his weight had risen to 11 st. During the early part of April he developed a diffuse septic rash and erythema all over his body especially noticeable on chest, arms, hands and fingers, which disappeared quickly following a sulphur bath. No acari were found. He continued very restless and troublesome to other patients. He stated there were maggots in the lavatory and rotten meat in the floor rubbers. Although more amenable than on admission he was nevertheless futile, childish, exalted and erratic. He dressed himself in a bizarre manner; when remonstrated with on this matter he was insolent, stating that as he was in a lunatic asylum he might as well behave as a lunatic. By night he slept well. Continuous colon irrigations, using 6–8 gallons at each irrigation, now replaced the simpler form of bowel lavage and these brought away a moderate amount of mucopus. For a few days a slight mental improvement was noted, but during two nights in the early part of May his conduct necessitated special record. He deliberately urinated in his bed and gave as his explanation that he did not want a mattress. Next day he alleged that someone else was responsible for this action.

On May 9th under general anaesthesia. Sinus examination and irrigation. Sphenoids—bone and mucosa normal, no exudate. Ethmoids—left, bone slightly sclerotic anteriorly; right carious ethmoid containing much mucopus. Antra—right, a few flakes of mucopus, left, much green mucopus. Drainage of right ethmoid and both antra. Tonsils removed by dissection—evidence of old quinsy in right. Adenoids removed. Direct smear of pus from left antrum showed numerous pus cells. Bacteriological examination showed *Streptococcus mitis* and diphtheroid bacilli. Some pyrexia—a maximum of 102° —occurred for five days following operation. Antral irrigations brought away large amounts of pus followed by mucopus, diminishing during May to July. The amount of this exudate varied from day to day, on some occasions irrigations gave clear returns, on other days a few flakes from both sides, to be followed by a small amount of pus from both sides, later a few flakes, then clear returns, the cycle then repeating but the exudate diminishing with each cycle.

May 23rd : Review by Ear, Nose and Throat Surgeon. Anterior nasal spaces, right injected, left clear. Tonsil beds satisfactory.

June 20th : Antral openings satisfactory, no adhesions. Anterior and posterior nasal spaces clear. Granular pharyngitis persists. Continuous colon irrigations which before the operation had brought away a moderate amount of mucopus, after operation brought away a lesser amount, and later returns were clear. Ultra violet light treatment was given. He continued to gain weight. His mental state after operation showed a definite improvement, hallucinations and delusions completely passed away. Early in June he showed willingness to assist in ward work and became now neat and careful in his dress and appearance.

July 4th : Ear, nose and throat review. Anterior rhinoscopy—nil. Posterior rhinoscopy—a little injection.

July 9th, 12th and 15th : Intravenous injection of T.A.B. vaccine, 250, 300 and 500 millions respectively. The first produced a rigor and a temperature of 104.4° followed by a fall, then a rise to 99.8° and then to 97.4° , the pyrexial reaction being spread over 48 hours. The second, a rigor and a pyrexial reaction which lasted 20 hours and an acme of 102.2° . The third injection produced a rigor and a pyrexial reaction which lasted only 14 hours, reaching an acme of 104.6° . Following the first injection herpes appeared on both lips more marked on the left side and became more

pronounced following the second, and was haemorrhagic especially on the left side. Some boils also appeared on the neck. Colon irrigation, previously clear, two days after the last T.A.B. injection brought away a large amount of mucopus but the return from an irrigation nine days later was again fairly clear. The antral irrigations were now clear. The exaltation which had been the chief feature of his later mental symptoms had now subsided, and there was no return of the former insolent behaviour. Delusions and hallucinations had completely passed away. He took an active interest in work and games.

On August 9th he was discharged recovered to the care of his mother. He had gained 30 lbs. on his admission weight, and realized he had been ill mentally as well as physically. The facial colour was now uniform and his aspect was composed, there was no facial twitching. He attributed his hallucinations, e.g., olfactory, to the disease of the nose and his delusions to his active imagination during his illness.

September 11th, 1928: His mother reported that his conduct and health were quite satisfactory. He realized his infatuation and had terminated his association with the married woman. He also realized the conduct he had exhibited had led him into difficulties which he now faced with sanity and proper judgment showing an altered outlook on life without exaltation.

December 2nd, 1928: His mother writes. "Though he has had to undergo great disappointment and disillusionment in both his business and love affairs, he has pulled himself together and has been able to take a fresh appointment, which he is filling quite satisfactorily. He is daily gaining confidence in himself and is giving evidence of sounder judgment and better reasoning power than he had displayed for some considerable time."

January 15th, 1929: She writes—"gets steadily better and shows no sign of relapse."

In March, 1929, he was under medical care with a mild attack of mumps, the parotid swelling was more marked on the left side. From this he recovered without sequelae and continued in business with good physical and mental health during the summer. In the following September he developed what appeared to be a bad attack of influenza, but refused to seek advice or to refrain from work; in fact, he displayed an increased pressure of activity therein, working on Saturdays and Sundays. This however, was rendered nugatory by a diminishing power of concentration capacity and soon he had created serious liabilities by extravagant purchases. The sequel was that his relatives were left with a considerable amount of work and financial loss when clearing up the results of his maldirection of his business. Increasing mental confusion developed and was manifested by erratic conduct. He dressed strangely; got all his things into disorder; talked nonsense; imagined he was doing big things in business; continually going about from one part of the premises to another beginning to do things in a futile way and not finishing anything he undertook; taking things to pieces for no apparent reason; on one occasion at his place of business he took off all his clothes leaving them at the top of the stairs, whilst he shut himself in his room; on another occasion he occupied the whole day in changing electric bulbs for no apparent reason. Other episodes were—washing clothes in the bath with paraffin, water and tea leaves; putting a live electric heater under a wooden table and left it having wrapped a clock in a silk handkerchief and put that on the table, later when found, the table was beginning to burn. Associated with these symptoms there was a serious and rapid loss of weight.

Under certificate he was admitted to mental hospital.

On Admission to mental hospital, November 29th, 1929.—Physical State: Weight 10 st. 5 lb., a loss of 27 lb. on his weight on previous discharge from mental hospital. Temperature 97.2° F. Skin, dry. A few discrete papulo-pustules on back. Facial aspect suffused with streaky dilated veins, similar to but less than when previously admitted. Circulation—heart normal. Pulse 78 regular. Blood Pressure, 132/74 m.m. Hg. recumbent. Lungs normal. Some bilateral conjunctivitis. Mouth and pharynx—much oral sepsis, carious teeth, many root filled. It was quite clear that since discharge several teeth had become carious and had been filled with metal. Palate and pharynx congested, left lateral pharyngeal band oedematous but no mucopus seen. Lymphoid follicles of pharynx enlarged. Pupils normal. Some bilateral ptosis with compensatory forehead wrinkling, more on left, where three horizontal wrinklings were visible. Plantar responses flexor. Sphincters controlled. Urine normal. Blood—Wassermann test, negative. Widal test. Typhoid 14. Aertrycke, Mutton 10, Oxford units. The rest negative.

Mental State.—His mental state was certainly less severely disorganized than on previous admission. There appeared to be no evidence of disturbances of the sensory fields and certainly no cacosmia, as on previous admission. He was nevertheless confused, very exalted, acceleration of ideas, but unable to concentrate on any subject.

Judgment and insight appeared lacking. Suspicious, resentful, inclined to show anger and violence, resistive to examination.

Progress and Treatment.—A colon irrigation brought away large quantities of mucopus. Dental examination found that several teeth had decayed and some had been filled since his previous discharge. These teeth were septic and, especially bearing in mind the condition of those removed during the previous mental hospital residence, required removal. On December 5th and 6th, 10 c.c. collosol calcium were subcutaneously injected each day, and on December 6th, under general anaesthesia, twelve carious teeth including several root filled and bearing periapical granulomata were removed leaving only canines and incisors in both jaws. During recovery from the anaesthetic it was observed that there was much mucopus in the left nostril. Recovery from the dental operation was uneventful and was followed by a definite improvement in general physical appearance and especially in facial tone and colour. He became less confused and whilst still exhibiting considerable exaltation he co-operated sufficiently to permit antral irrigations being attempted. It was found that the right antral drainage opening was patent but the left had healed. On December 18th, under nitrous oxide anaesthesia, drainage of the left antrum was effected. He remained exalted, dictatorial and futile in conversation and conduct. Irrigation of the left antrum brought away mucopurulent discharges. On December 26th a colon irrigation brought away a fair amount of dense mucopurulent exudate. He was still a very troublesome patient and much given to futile conduct, e.g., endeavouring to send an envelope containing cigarette ends through the post. Physically, however, improvement was appearing and his weight at the end of December was 10 st. 11 lb. From January 2nd to January 8th, he had a course of seven intravenous injections of T.A.B. vaccine, doses from 0.1 c.c. increasing to 2.4 c.c. These caused rigors, maximal pyrexias from 102° F. to 105° F., but chiefly between 102° F. to 103° F., some vomiting and some looseness of stools. He tolerated the course well. From January 10th to the 29th he had four colon irrigations which produced returns containing diminishing amounts of mucopus.

During this month the mental confusion was clearing, but his control of instinctive reactions was still poor, the manifestations of an aggressive character became possibly even more in evidence than formerly, for as his physical state progressed he was better able to display his state of irritability and exaltation. He was very abusive and obscene in his choice of language and threatening in his manner. On one occasion a relapse back to confusion occurred and he again became destructive to his personal property and indulged in childish antics, e.g., insisting on wearing a piece of gauze round his head in the form of a veil, hoarding rubbish. At the end of January his weight was 11 st. 7 lb. and he was sufficiently composed to co-operate in radiography of the jaws and nasal sinuses. The jaws presented no abnormality whilst the sinuses appeared normal except the left antrum, which appeared to be obliterated—suggestive of a chronic condition. During February there was a gradual diminution of the severity of his mental symptoms. He slept better than formerly, he still hoarded rubbish and at times displayed some destructive tendencies, but there were no further lapses into definite confusion, in fact he appeared to be gaining some insight for, on one occasion following remonstrance, he volunteered that his unpleasant manner was “the nature of the beast”—meaning himself. His appetite at this stage was voracious and his manner of eating was distinctly crude. His mouth now, on both clinical and radiological evidence, was considered to be healthy and the returns from the colon irrigations brought away less mucopus. During March improvement became more defined. Although some exaltation was apparent he was now sleeping well and had ceased to be destructive and abusive; he was more sociable and able to perform simple work with enhanced power of concentration and initiative. Appetite and mode of eating were now normal. The returns from the colon irrigations became clear and and a bacteriological examination of the faeces found no abnormal organisms. At the end of March his weight was 12 st. 1 lb. He was now treated with ultra violet radiation.

On April 4th: Ear, Nose and Throat Review. Granular pharyngitis still present. Ears normal. Right inferior turbinate enlarged posteriorly. Two injections, each 10 c.c., of colloidal calcium oleate were given intramuscularly.

On April 24th, under cocaine anaesthesia a nasal sinus examination using the Watson-Williams technique was carried out. Sclerotic changes were now found to be present in the right ethmoid and anterior wall of the right sphenoid. The sphenoids, ethmoids and right antrum were found free of exudate. The left antrum still yielded exudate and its drainage opening was sufficiently patent. Bacteriological examination of the washings from the left sphenoid and its control was negative both on aerobic, anaerobic and special cultures. These clinical and bacteriological findings were in contrast to those found on examination of the nasal sinuses following the previous admission. The post-operative result was also unlike that of the same occasion. On

this occasion, the temperature rose to 98.8° F. on the evening following the operation and thereafter was normal. He was allowed to get up on the 26th. At the end of April his weight was 12 st. 9 lb. A dental review on May 9th found the remaining teeth still healthy. Colon irrigations still gave clear returns. His general appearance, carriage, stance, poise of head had much improved, indicative of general improvement of muscle tone. This was also shown by the facial aspect, and associated with this the facial colour was now definitely better. He was now displaying much less of the arrogant and exalted manner and voluntarily took up work out of doors during May.

A review at the end of May found him appreciative of the nature of his illness and the treatment he had received. He expressed satisfaction that he had been saved from mistakes which he would have later regretted. He was able to describe the upper respiratory tract disturbance which preceded the onset of the acute mental symptoms, thus confirming the history obtained from his relatives. He recognizes that his condition in this attack has not been so severe as on the former occasion and this confirms the objective evidence on the matter. In this present attack sensory disturbances, present during the former attack, e.g., cacosmia and headache, have been absent and the mental confusion has not been so profound. Objectively now he is calm, composed and pleasant in manner, normally orientated, and his conversational capacity and its content are normal. The antral washouts are now clear. His weight is stationary at 12 st. 8 lb. although working well out of doors, i.e., 4 lb. more than on previous discharge.

June 12th, 1930 : Discharged "Recovered."

CASE 10.

7249, L.S., male, single, labourer, aged 22 on admission to mental hospital on October 15th, 1928.

History.—Family : No record of insanity in either branch of family. Mother died of cancer of liver. Father alive and well, non-alcoholic, occasionally gouty. Brothers : Two, one killed in motor accident, the other alive and well. Sisters : Two, alive and well.

Personal.—Father states that from an early age (normal birth) patient has always been excitable, unreliable, impulsive and inclined to magnify any slight incident. In later years he has taken up several kinds of work, but soon leaving them stating that he had acquired all the knowledge necessary. Has not had measles or scarlet fever. Between seven to eight years of age he fell from a tree knocking his head rather badly, but made a good recovery. German measles at ten. At nineteen whilst attempting to clear a dirty "suds" pipe at the works, he sucked some alkaline material into his mouth. A sore throat followed, which, after a week, became very septic; the glands on both sides of the neck became swollen, there was considerable dysphagia and almost suffocation before the condition subsided. A swab for diphtheria was negative. Both before and after this incident he suffered frequently with colds. For the last three to four years he has been troubled every year with septic skin lesions especially on the back of the neck. At twenty he had an abscess over the outer third of the left eyebrow. In July, 1928, he was knocked down by a motor but he was apparently quite well from the resulting slight concussion on the following day.

Present Illness.—On September 14th, 1928, he was taken ill with influenza followed by pneumonia associated with delirium. He was treated in a general hospital, but as the delirious state persisted he was transferred to an observation hospital where he was found to be in a state of mania. He was noisy, continually singing and shouting, constantly getting out of bed, pretending to shoot and attempting to strike the other patients. He announced that he had a generating station in his body and had full control of it, also that there was a small harp inside him and he was able to play it.

On Admission.—Physical State : Weight 8 st. 0 lb., Height 5 ft. 6½ in. Temperature 99°. Sparely nourished. Acneiform rash on face. *Circulation—Heart* : Limits, normal. Sounds, second pulmonary accentuated. Occasional extra systoles at irregular intervals. Peripheral circulation—face sallow. Blood pressure 150/100 recumbent. Pulse 84. *Lungs* : Normal. Respirations 20. *Mouth, etc.* : Granular pharyngitis. Tongue coated. Sordes on lips. Carious left lower bicuspid. *Nervous System* : Pupils equal, react to light and accommodation. Spasmodic twitching of both sides of face. *Reflexes* : Superficial, active; plantar response flexor. Deep, knee ankle jerks, hyperactive, but equal. No clonus. Sphincteric control, faulty. Articulation, rather slurring. Some tremor of lower face whilst speaking. *Muscular System* : Development moderate, tone fair. *Urine* : 1024, acid, mucus. *Blood* : Wassermann test, negative. Widal test—negative to all groups.

Mental State.—Completely disorientated. Judgment and insight were lost. Instinctive attention was hyperacute but sustained was poor. Replies to questions

were irrelevant. Voluntary conversation was rambling and incoherent, flights of ideas were shown in his noisy chattering. He stated he was a great fighter, could lift tons and could bring back life. He frequently shouted apparently in response to auditory and visual hallucinations. Unstable emotional control, generally exalted, but at times wept for no apparent reason. Resistive to nursing and examination, he was mischievous, at times destructive, striking impulsively and habits were faulty.

Course and Treatment.—The slight pyrexia on admission subsided. A large amount of wax was removed from both ears. During the rest of October he continued noisy, restless and confused, difficult with food, mischievous and wet and dirty. At the end of October his weight was 7 st. 5 lb. During the early part of November the hyperacute symptoms diminished in intensity and he became less noisy, more amenable, but was still confused, excitable, destructive, irresponsible and noisy. His conduct was such that a routine ear, nose and throat examination was impossible.

On November 14th: Under general anaesthesia. Preceded by injections of colloidal calcium oleate on three successive days. Ear, nose and throat examination. Ears—extreme retraction of both drums. Tonsils—septic. Removed by dissection. Nasal sinuses—examination and irrigation. Flakes of mucopus were obtained from the left antrum. The left antrum was drained intranasally. On the day of the operation, his temperature rose to 99.6° F. falling to 95.4° F. on November 17th, then rising to normal. By the end of November his weight had risen to 7 st. 11 lb. During December he was still confused and somewhat irresponsible but was more amenable, e.g., sufficient to permit of dental radiography. Following removal of the carious tooth in the left lower jaw, there was an exacerbation of mental symptoms. Colon irrigations were, however, possible and the returns were dense with masses of mucopus. By the end of December his general condition had improved and his weight had risen to 9 st. 2 lb. He was still confused. From January 8th to 16th, a course of non-specific protein therapy was given, T.A.B. vaccine was given intravenously on seven occasions. Temperatures obtained varied from 103° F. to 107.4° F. preceded by rigors. Maximum pulse rate was 136. Herpes appeared on the upper lip and chin. During the course of this treatment the tonsillar and associated lymph glands became enlarged and some small purulent sores appeared on the scalp. After the completion of the course both conditions subsided. It was at this period that a marked facial change occurred. Prior to this, his face had been thin and narrow, the temporal fossae and buccinator regions especially were sunken, afterwards there was a filling of these regions. The effect was to produce a full facial appearance and only now could a resemblance to his sister be recognized. His complexion now became more ruddy. A change in his mental state followed the T.A.B. course. He became definitely composed, orientation was regained, memory gradually became continuous, conversation relevant, conduct normal and full co-operation was obtained in treatment, especially in colon irrigations which still brought away masses of mucopus. At the end of January his weight was 10 st. 0 lb. During the cold weather of February, 1929, progress continued and by the end of that month his weight was 11 st. 0 lb. This progress was continued through March, he displayed initiative in work and was allowed out on parole, conduct being satisfactory to relatives. A review during the early part of March, 1929:—He realizes he has been seriously ill with a state of complete mental confusion and feels that he has “to pick up many loose ends to get my full bearings.” He was now able to describe his sensations during what he remembered of his illness and to give details which agreed with those given by his relatives and are embodied in the history. Until three days before admission to the general hospital, he was in his usual health. The onset of symptoms was a feeling of heaviness in the head, more particularly at the back of the head where he had a sensation as if something was pressing on both sides, accompanying this was a feeling of general weakness. Influenza was diagnosed and he was sent to bed. He remembers admission to the general hospital and five days of his stay there. During this time, he had pain in the right chest and the pain at the back of the head appeared gradually to get less. He does not remember when he left the hospital, but remembers leaving as he thought he was going on a holiday. He remembers singing whilst in the general hospital and something of the journey to the observation hospital and of stating on his arrival there that he was a boxer. His memory therefore, is practically a blank until he began to regain normal consciousness about a month ago. He has a hazy recollection of ripping up a blanket and at one time he imagined he was a diver and was doing good by getting people from the bottom of the sea, of swimming the Channel and playing Jack and the Beanstalk. In a composed manner he expresses regret for the antics he displayed and feels now that he would like to make some return for the kindness shown him when he was in this state, by helping those who helped him. He remembers only vaguely the radiographic examination, but has no memory of the throat operation, the removal of the carious tooth nor the T.A.B. injections. He is sure the colon irrigations have assisted him, as he feels clearer and lighter in the head after the irrigations.

Olfactory disturbances.—No memory of any disturbance of smell. Tested with odours he separates the pleasant from the unpleasant, recognizes they are different and names most of the agents.

Visual disturbances.—He remembers, but cannot date when, that he had a sensation of everything becoming blurred and as if objects were a long way off.

Taste disturbance.—He had a bad taste in the mouth before he went to the general hospital.

Hearing and Headache.—Although he has only a very hazy recollection of what was happening around him and what he was doing during the period of the acute mental symptoms, he has a definite memory of unpleasant subjective sensations referable to hearing and headache. He remembers that during this period that he had bell noises in the head, not situated on one side more than the other; at one time it seemed as if he were immediately under a large bell, which was constantly clanging and tolling and filling his whole head with noise. As well as the headache at the back of the head he had a sensation during the latter period as if his head was in a vice, but the sensation was worse on the left side in the frontal region where it was "as if someone were trying to rip my forehead up." At the best it was a continual dull ache worse on the left side. After he came to himself, he had some remains of the headache and soreness of the scalp on the left side but during the last fortnight all headache and soreness had passed away, and he has had no return of the clanging bell sensation. He has had no attacks of abdominal pain at any time. Food tastes satisfactory now and appetite is good. Septic spots on skin have healed. Facial colour, mobility, tone and composure are good. This facial composure is in accord with his general composure, physical and mental, and is not to be mistaken for depression or fatigue. His general muscle tone is good. He admitted that prior to his illness he had been restless and had not kept steadily to one employment. During April he continued to work well out-of-doors at digging and went out on parole with relatives. At the end of April his weight without clothes was 10 st. 9 lb., which he said, was his former weight with clothes. His father reported that he found him much steadier than before the onset of the illness. He was discharged recovered on May 9th, 1929.

October 1st, 1929: His father reported that mentally, "there has been maintained a general all-round improvement, he is still a little excitable, but not to any great extent; he is steadier and not so prone to exaggerate. There is a marked improvement in his memory and he has up to now shown no desire to change his situation of work. Physically, he has only complained of headache and sore throat once, when he had a cold two weeks ago. He sleeps well, appetite very good. No unpleasant smells or tastes and a complete absence of noises. He has had excellent health, except for the cold, since discharge from hospital."

December 16th, 1931: Visitor reported interview with relatives—mental and physical condition very satisfactory, except that he is "nervous," but they add "he has always been so." Sleep and appetite are good. Weight normal. No headaches, no colds nor catarrh. Is working as a painter and is generally employed.

CASE 11.

7103, G.R., female, single, nurse, aged 26 on admission on May 28th, 1928. First certification.

History.—Family: Mother died of tuberculosis in a mental hospital, aged 37. Paternal aunt insane. Brother had tonsillectomy for "paralytic rheumatism and chorea" when 19, chorea passed away after the operation and he now earns his living.

Personal.—Neither scarlet fever nor diphtheria. German measles at 5, measles 6–7 years of age. Since a girl she has suffered with "very bad colds in the head," and "ulcerated throats," in summer as well as winter and on these occasions used many handkerchiefs. Has always been rather "nervous," jumpy, excitable and "hysterical," and suffered with frontal headaches especially at menstruation. No serious abdominal trouble although has had some "vomiting attacks." There is no history of epilepsy. About the time of the pandemic she had the "gastric type" of influenza and subsequently had bad attacks of influenza. Has had nasal catarrh since the first attack of influenza, when she was seventeen years of age. In 1925 she became a probationer nurse in another hospital and continued in tolerably good health during 1926–1927 except for attacks of indigestion and flatulence during menstruation. In 1926 a badly decayed upper right first molar was root filled and crowned and two other upper molars, right and left, were extracted for caries. During this period she remembers occasional shooting pains over the left parieto-vertical region, not always related to menstruation. Menstruation had been usually 5/28 days, but there were two occasions, each lasting 2–3 months, during the winter 1923–1924 when catamenia had a fortnightly periodicity and each menstruation lasted 5 days.

Present Illness.—In March, 1928, menstruation again became irregular, appearing every fortnight and lasting five days associated with nausea and severe pain in the lower mid-abdomen. She became continually constipated and took Beecham's pills, and, as they were not effective, she dosed herself with liquid paraffin and white mixture. The result was excessive purgation, with bright blood in the stools, and she became almost incontinent. Food "passed through" quickly and she had "rushing feelings" in the upper abdomen. Palpitation, breathlessness and giddiness developed. She now began to lose weight. Her usual weight was 11 st. 7 lb. She reported sick, and on April 2nd she was admitted to a general hospital and investigated for gastric ulcer, gall stones, etc., by X-ray, and fractional test meal. No evidence was found of organic disease. The abdominal symptoms improved by the middle of May and she was able to take ordinary food and to be about again, but menstruation continued on a fortnightly basis. Mental symptoms now appeared and increased in intensity. She smiled in a foolish aimless manner, talked incessantly, said she could not eat the food, which she declared was filthy; apparently she had some little insight into her state, for amongst her remarks she said she was "acting silly," but she was certainly unduly emotional and lacking in self-control. She insisted that she was "filthy," that she had "no faith," that food gave her "tuberculosis," that her room was "filthy" and that the Matron was "filthy." She became destructive, screamed and laughed uncontrollably, and finally, when taken out for a walk, began to eat horse dung, grass and flowers.

On Admission.—*Physical State*: Height 5 ft. 6 in. Weight 9 st. 12½ lb. General appearance indicated a state of indifferent health, anaemic sallow complexion, greasy skin. Heart limits normal, but the first sound at apex of poor quality. Pulse 80, low tension. Blood pressure 112/68 recumbent. *Lungs*: Respirations 20, signs of a chronic bronchitis. *Mouth and Throat*: Upper right first molar root filled, left lower first molar a small stopping, otherwise teeth healthy. Gums healthy. Some mucopus on posterior pharyngeal wall. *Ear, Nose and Throat Examination*: Ears—nil abnormal seen. Nose—anterior rhinoscopy. A slight excess of mucus in turbinate region. Posterior rhinoscopy revealed hypertrophy of posterior end right inferior turbinate, septal mucosa both sides polypoid. Nasal sinuses—on transillumination—antra and frontals clear. Throat—slight injection lateral pharyngeal bands. Tonsils—pus in right. *Nervous System*: Narrowing left palpebral fissure, pupils equal and react to light and accommodation. Knee jerks increased but equal. *Urine*: Acid, 1042, pus, albumen present. *Blood*: Wassermann and Widal negative. *Gynaecological*: A mucopurulent discharge from an endocervicitis. Adnexa free. Temperature varied from 96.6° to 99°, averaging about 97.6°F.

Mental State.—Resistive to nursing and examination. Restless, noisy and impulsive, threw herself naked on the floor, threw food about, refused food stating it was pig's food. Suspicious and resentful in manner. Association of ideas retarded, judgment and insight lost. Orientated for time and place. Considerable emotional instability. Disturbances of sensation.—Olfactory—she "smelt syphilis all over the place." Auditory—she heard the "voice of an American man telling her the beginning of everything," she heard the voice of her former doctor. Visual—said she saw Sister F. She mistook identities. She said she was full of tuberculosis germs and announced "they were trying to kill her at the hospital."

Course and Treatment.—She continued noisy, restless and hallucinated.

June 8th: Dental—extraction of root filled upper right first molar.

June 13th–17th.—Menstruation. More hallucinated and restless on day prior to onset, continued so during, and at termination noisy and excited. The mental symptoms showed no improvement. Behaviour noisy and irresponsible, impulsiveness shown.

June 27th: Under general anaesthesia. During its induction she had an epileptiform seizure. Sinus examination. Sphenoids—right—clear, left—not entered. A sclerosing left sphenoiditis. Ethmoids—both contained pus. Antra—both contained pus. Intranasal drainage of both antra and both ethmoids. Tonsils removed by dissection. Surgical convalescence was uneventful. Mentally she remained futile, noisy and resistive to nursing.

July 2nd–5th: Menstruation. Crying and laughing hysterically at frequent intervals the day before onset, and during the flow, more composed at termination but habits were faulty afterwards. Menstruation continued to occur at roughly fortnightly intervals, recurring again from July 15th–18th and associated with noisy, confused, violent behaviour. Habits dirty.

From July 17th–24th a course of T.A.B. was given. Eight injections, intravenously, one daily. The pyrexial reactions were: 102°, 102°, 101.2°, 100.8°, 98.4°, 100.4°, 102°, 104° with a secondary rise to 100.6°. The maximum pulse rates corresponding were 120, 116, 116, 96, 88, 108, 108, 108. Average minimum pulse in non-pyrexial period 72. After this course she became less noisy and less dirty, but was still

resistive, childish and futile in her conduct. Antiseptic gynaecological treatment and colon irrigations were given. Menstruation occurred on August 27th, for one day, when she was confused and destructive. During September and October menstruation did not appear and her conduct was somewhat better than formerly, and she co-operated in treatment. During November a gradual diminution of her symptoms occurred, and she regained weight she had lost before and since admission.

November 25th-28th: Menstruation returned associated with decided mental improvement. The fortnightly periodicity was, however, still in operation for the flow appeared again from December 10th-13th, but she showed no premenstrual or menstrual disturbance and continued to improve mentally and physically. The regularity of the function now began to approach normal as it did not appear until January 3rd, when it lasted until the 5th, and was associated with still further improvement. Her weight now was 10 st. 3 lb. Menstruation returned from January 30th-February 4th. The nursing comment thereon is, "Quite well." Weight at the end of January was 11 st. 2 lb.

January, 1929—Review: During the improving period she has shown increasing initiative, interest and capacity in all the activities of the hospital, working in the ward and assisting in the chorus of the hospital operatic company. Conduct in the hospital and whilst on parole most satisfactory. Appears cheerful and happy and has a good sense of humour. Conversational capacity normal. Realizes she has been ill physically and mentally and is able to supply many details and confirm others in her history. Orientation normal. She remembers admission because it was the day after her birthday and menstruation had finished 3 days before. She remembers that on admission she had a feeling that she "could not keep herself together" and thought she was dying. It was a feeling of intense restlessness and irritability. Although she remembers many details of her illness she knows she was more or less confused on many occasions, both before and after admission. She realizes her actions were foolish but she was unable to control herself even when she knew they were silly. She remembers experiencing "voices," the sounds of footsteps and the shutting of a door caused a sensation of "voices," after admission. This sensation of "voices" disappeared after the nose operation. She has now no unpleasant tastes, and food tastes normally now. The unpleasant smell in the nose has disappeared, and she can separate the test odours, recognizing most of them, and distinguishes the pleasant from the unpleasant. She has no memory of visual disturbances. Before and for a period after the nose and throat operation she had a heavy pressure feeling at the back of the head. After the operation it gradually cleared and has not returned. Her head feels clear now. She has had no abdominal pain since that preceding admission. She feels cheerful and happy. Appetite is good, sleep is satisfactory and bowels act regularly. Apart from the seizure she had during the induction of anaesthesia she has had no convulsive seizure of any kind. Facial colour, mobility and tone good. Carriage and stance normal. No albumen or pus in urine. Ear, nose and throat review. Ears—nil abnormal. Nose—anterior rhinoscopy, crust inferior turbinates both sides. Anterior ends of inferior turbinates both a little enlarged. Antral openings both patent and on irrigation the returns are quite clear from both sides. Posterior rhinoscopy—lateral pharyngeal bands enlarged both sides. Fauces. Perfect freedom of both posterior pillars. General condition of nose and throat satisfactory. Gynaecological state, no further treatment required.

February 14th, 1929: Discharged on trial to care of relatives.

March 14th, 1929: Reports from her doctor, relatives and the Visitor very satisfactory. Discharged from books recovered.

October 29th, 1929: Relatives report that three months ago she secured a nursing post in an institution in a neighbouring city and is doing well. On the three occasions she has visited them since then she appeared physically and mentally very satisfactory, her appetite was good and weight has increased. Has had no illness, cold, etc., since discharge from the mental hospital.

October 24th, 1930: Visitor reported patient is still working at the general hospital, and has just completed her second nursing examination. Her physical and mental condition is very satisfactory. No headaches, nor have disturbances of smell, taste or hearing returned, sleep has been good, even when on night duty. Weight normal. A short time ago had "a cold in the ear" but otherwise has had no illness.

December 28th, 1931: Visitor reported patient was continuing as formerly, and was preparing to take her final nursing examination in February, 1932. Her general physical and mental condition was very satisfactory. Weight normal, no headache. In the summer of 1931 she had some bronchitis with a bad cold, but she has made a good recovery from that attack.

GROUP III.—*Cases in which Non-Specific Protein Therapy was given before Surgical Treatment of Foci was begun or completed but who only recovered after completion of such surgical treatment.*

It will be remembered that mental recovery in the cases in Group II ensued after administration of the more potent, pyrogenic, non-specific therapy, especially T.A.B. vaccine, given after completion of surgical treatment. It might be urged that if this therapy had been given in the first instance recovery might have ensued immediately, and the necessity for surgical intervention might not have arisen, or only limited intervention would have been needed.

Cases do occur where non-specific therapy, whether mild or pyrogenic can be very successfully employed without surgical intervention being required, such are cases of open sepsis.

In other cases this same therapy, whilst not effecting complete recovery, has the effect of considerably mitigating the intensity of the toxæmia. This may occur in cases where the toxæmia responsible for the mental state is of a mixed variety, partly arising from open and partly from closed sepsis. In such cases the focal activation of the open moiety of the sepsis may be effective in reducing the intensity of the symptoms.

A case, Case 12, is described which illustrates this latter type of possibility and result. Here the administration of T.A.B. vaccine by intramuscular injection appeared to be effective in mitigating the intensity of the severe confusion with excitement, but did not effect a complete recovery. Recovery only followed the removal and drainage of nasopharyngeal sepsis. In this case there was no dental sepsis present.

In cases of closed sepsis with defective or deficient drainage even the potent non-specific agents may fail and in such cases consideration must be given to surgical intervention.

Several cases can be quoted to illustrate the failure of non-specific therapy to effect that recovery which later followed surgical treatment of the foci.

In Part II of the Seventeenth Annual Report of the Board of Control for 1930, some cases are described which illustrate this point, and are now referred to.

Mrs. H. (p. 32 and 33). In this case non-specific protein therapy was given very shortly after admission, but failed to effect a recovery, nor did mental recovery follow dental treatment.

Six months then elapsed before the nasopharyngeal sepsis was surgically treated, but exactly a month after that operation she had become so well, mentally and physically, that she was discharged from the mental hospital and has since kept well.

F. 752 (p. 28–31) similarly was given T.A.B. therapy, followed by many other modes of treatment, without avail. Recovery, however, was rapid, and has continued substantial, following the completion of surgical drainage and removal of nasopharyngeal foci of sepsis.

Like the preceding case, exactly a month after the last operation she was discharged from the hospital.

In the case of Mrs. A.G. (p. 26, 27) other forms of treatment were practised, for a period before resort was had to non-specific protein therapy. The prior treatment was not successful nor did the T.A.B. therapy effect complete recovery, but after its use sedative drugs were not required. Following the surgical treatment of the foci a very substantial recovery has appeared.

In Case O (p. 13–15). Pyrogenic non-specific therapies were practised, and surgical treatment of oronasopharyngeal sepsis was carried out, but until the surgical measures were taken to improve the bowel drainage and diminish absorption from the ileocaecal area the mental state remained very unstable.

It might be considered that the treatment by T.A.B. vaccine given to two of these cases, viz., Mrs. H. and F.752 was very limited, and that if a more thorough treatment by non-specific protein therapy had been practised recovery might have ensued earlier.

Alternatively it might be held that in the cases of Mrs. A.G. and O., sufficient time had not been allowed for the development of recuperative activity of non-specific treatment before recourse was had to surgery.

Two cases may be quoted to show that even a drastic treatment by T.A.B. will not succeed if the causative pathological lesions are of the closed variety, and further that the lapse of years following such therapy will not assist recuperative activity of the non-specific therapy if drainage is defective or deficient.

The first illustrative case is F564 (p. 22-24, Board of Control Report, 1930). She received a full course of T.A.B. vaccine which evoked good pyrexial response, but the fever so produced was without beneficial effect on the mental state, in fact the treatment appeared to have made her worse mentally for a period. Thereafter a period ensued during which there was opportunity for, but no improvement occurred in the mental state. Eight months after surgical treatment of nasopharyngeal sepsis, thirty-three months after T.A.B. therapy and three years and eleven months after certification she was discharged recovered and has since kept very well, supporting herself in employment.

The second case to illustrate the same points is described in the following series, Case 13. She had an extensive non-specific treatment with colloidal calcium oleate, followed by dental treatment, and later two full courses of non-specific protein therapy without mental recovery ensuing.

A year after the nose and throat operation, which took place four years after certification and about a year after the second course of T.A.B. treatment, she was discharged recovered, and has kept remarkably well, supporting herself in domestic service.

In her case the maximum pyrexias were low, and judged by her temperature under usual conditions, she was the subject of hypothermia.

In this case two courses of non-specific protein therapy were unable to destroy the persistent closed sepsis, of which the mental disorder was a symptom.

CASE 12.

8278. D.M.S., female, single, school teacher, aged 20 on admission to mental hospital on September 18th, 1931. First certification.

History.—Family: No psychotic heredity. Mother aged 30 and father 29 at birth of patient. No sisters. One brother had infantile paralysis at 3½ years, otherwise well, now aged 24.

Personal.—Myopia. Otherwise health has been considered good, both at school and at University where for two years she worked for and obtained a teacher's diploma, having passed the Northern Universities matriculation examination.

*Present Illness.—*Mental symptoms did not attract attention until September 14th. At first she was depressed, later she became "jovial, but seemed to be in a daze," talked nonsense, acted mischievously and foolishly. Later she went into a school, where she had no authority, and announced she was going to teach; she carried a tin soldier which she told the headmaster was her "mac" and began talking to a class. An examiner found that "she rambled and talked incoherently and foolishly about the world and where it was going and breaking it and giving white heather and seeing hope. Her manner was of unnatural levity and she laughed inappropriately. In one hand she had a small key, in the other a tiny feather and she gave me the feather."

Admission.—Physical State: Height 5 ft. 2 in. Weight 6 st. 11 lb. Temperature 97.6° F. Poorly nourished. Dry skin. Pronounced pes planus. Joints free. No thyroid enlargement, neck measurement 29 cm. *Circulation:* Heart. Limits, normal. Sounds, clear. Pulse, poor volume, 86 when recumbent, when erect rose to 100 and 120 with some irregularity of rhythm. Blood pressure, 130/84 mm. Hg. Peripheral circulation, pale face, some flushing in malar region, extremities (on a warm day) cold, but not cyanosed. *Lungs:* Respirations 20. Chest wall poorly clothed. P.N. good in all areas, subnormal breather therefore air entry poor, but no adventitious sounds. *Mouth:* Tongue coated and dry. Narrow and high palate. *Pupils:* Equal, react to light and accommodation and consensually. Ptosis of lower lids marked, showing sclerotics below corneae, and of upper lids the right more than left. It was elicited that she experienced frontal headaches, indicated by using the right hand. Wax was present in both ears. Plantar responses flexor. Abdominal reflexes hyperactive. Knee jerks present and equal. No clonus. No anaesthesia. Sphincters not under control. Muscular power, development and tone all poor. Very

constipated. *Blood*: Wassermann test negative. Widal negative to all groups. *Urine*: 1015 acid, nil abnormal.

Special Examinations, on various dates. Ophthalmological—marked myopia. Discs show only myopic changes. Ear, nose and throat.—Rhinoscopy: Anterior nasal spaces. Clear both. Posterior nasal spaces. Great polypoidal enlargement of both inferior turbinates. Tonsils. Liquid pus in right. Ears. Left, retracted membrane tympani, incus showing. Right, ditto, dry attic perforation. Nasal sinuses. On transillumination. Frontals fair. Antra clear. Gynaecological—Intact. Rectal examination, uterus in good position, not enlarged. Radiographic of jaws, nil abnormal. Dental—nil abnormal.

Mental State.—When lying in bed she presents a vacant apathetic expression, facial tone much reduced, but when addressed adopts a suspicious and at times a hostile attitude. Very confused. Completely disorientated. Retardation of association of ideas. Memory lost. Attention poor. Appreciation of questions poor and very few relevant replies can be obtained to questions. At times she rambles incoherently. Says she hears male voices speaking to her, these are the voice of God telling her what to do. She heard this voice first on Sunday last, when she went to Church to hear her friend's fiancé play the organ. Through the music she heard this voice speaking to her, and she has continued to hear it since. On that Sunday she heard "something go bump in the head." She gets frontal pains and "pains at the back of the ears when she thinks too much." Restless, resistive to examination and nursing attention, especially at night.

Progress and Treatment.—September 19th: Very impulsive and violent. Struck nurse across the face, resistive to treatment.

September 20th: Extremely noisy, restless and resistive to nursing last night. Intramuscular injection 0.5 cc. T.A.B. given this morning. She was too resistive to permit of temperature being taken regularly, but a pyrexia of 100.4° F. was found on one occasion. Following the T.A.B. injection she was quietly behaved during the day.

September 21st: During the day was restless, noisy, resistive and faulty. 1 cc. T.A.B. given intramuscularly. Impossible to take temperature.

September 22nd: T.A.B. 1.5 cc. intramuscularly. Noisy, restless, impulsive throughout the day. On one occasion it was possible to take temperature, it was 101.4° F. Pulse poor volume. Irregularly intermittent. Faulty.

September 23rd: Noisy, restless, impulsive, faulty, urine and faeces.

September 24th: T.A.B. 2 cc. intramuscularly. Quiet, but restless.

September 26th: More amenable, less restless, quiet but very confused.

September 28th: A very appreciable improvement. Composed. Quietly behaved, amenable to nursing and examination. Shows conversational capacity, uses connected sentences and her replies are relevant and coherently expressed. Recognizes time and those about her. Reads a book. Hallucinations ceased.

September 30th: Quietly disposed. Well behaved and exhibiting a general interest.

October 3rd: Appears much better mentally and physically. Is now eating and sleeping well. Co-operated yesterday in X-ray examination. Exhibits signs of a helpful attitude to others.

Progress continued.—October 16th: There is noticeable a mild exaltation and excitement now, an abnormal elasticity of gait and an over activity of facial movement. These symptoms later became marked, but general conduct is good and there is no appreciable confusion. A childishness, a lack of maturity considering her age and education, is also manifest.

October 18th: The symptoms of mild exaltation are still present. It is probable that these symptoms are a menstrual reaction, premenstrual or, as menstruation has been in abeyance since admission, moliminal.

October 25th: Confirming the view that this period of excitement was moliminal are the facts that it has subsided, that menstruation has not appeared and that its onset was within the normal menstrual time following her last menstruation.

End of October.—*Review*.—Considering her mental state on admission she is now very much improved. She is normally orientated and recognizes she has had a mental illness. She professes to remember admission to hospital. Says she was in a "nervous" state for three days before admission. This state came on immediately following the cessation of menstruation. A one day period—normally, three days—had occurred three days before admission. During this nervous state she was fearful, could not sleep, had headaches, frontal and vertical. She has no memory of the first period following admission. She has no memory of auditory hallucinations or of tinnitus aurium nor of having T.A.B. injections but she is able to confirm the facts given concerning her education. She does not appear to have experienced cacosmia nor anosmia and examined now with test odours she names them all. She now has no

headache. She has had sore throats occasionally in the winter, and in February, 1931, had an attack of influenza which lasted a week, but she did not go to bed. No headaches then. Menstruation to date is in abeyance since admission. The information which she has given has been obtained after much effort in patient questioning and it appears that there is considerable psychomotor retardation. Nevertheless she has the capacity of appreciating what is told her, and of forming a judgment thereon. It has been explained to her that there is reasonable ground to believe that her illness has been due to nasopharyngeal sepsis which is undoubtedly present, and that she should have surgical treatment for that condition, not only in order to avoid the possibility of recurrence of the confusional state, but to prevent the septic state in the nose and throat from extending therein. It is pointed out that if she desires she may be discharged from mental hospital, and have the necessary surgical treatment carried out elsewhere, but she elects to accept the offer to have it done in the mental hospital, and in so doing acts contrary to the view of her mother, whose idea had been that she should leave the mental hospital as soon as possible. The mother later acquiesced in the proposed treatment.

Objectively patient is now quiet, composed, well behaved and working well. Appetite and sleep are good. Physically, she has gained a stone in weight, her present weight is 7 st. 12 lb. Facial aspect and general carriage indicate improved muscle tone. Cardiac limits are normal, rate is rapid, 96, but regular, except for respiratory variation. Mitral area, sounds good. Pulmonary area, first sound blurred, the second is accentuated and split. No murmurs. Blood pressure: 130/74 m.m. Hg. Lungs clear. Urine 1018. Nil abnormal. Bacteriological examination of faeces. *Streptococcus saprophyticus*.

November 3rd and 4th: 10 cc. colloidal calcium oleate injected subcutaneously each day.

November 4th: Under general anaesthesia.—Nasal sinus investigation and irrigation. Watson-Williams' technique. Sphenoids—right at $3\frac{1}{2}$ in. mucopus. Left at $3\frac{1}{2}$ in. clear. Ethmoids—right, clear. Left, mucopus. Antra—both: Flakes of mucopus. Intranasal drainage of both antra and right sphenoid. Removal of tonsils by dissection. No adenoids. Recovery from anaesthetic and operation was uneventful. Temperature rose to 99.2° F., 99.4° F. and 99° F. during the evenings of November 4th, 5th and 6th, respectively. Otherwise there was no change physically or mentally. The antral irrigations at first produced soiled returns, but after a week, the daily irrigations became and continued clear.

November 14th: Ophthalmological examination. Myopic state as before. —4.5 sph. R.E. —3 sph. L.E. Discs only show myopic changes. No evidence of inflammation or of disturbance following operation.

November 18th: Ear, nose and throat review. Satisfactory.

November 24th: Week-end leave. Satisfactory.

December 10th, 1931: *General Review*.—Continues well orientated. Confirms her former appreciation of her illness, and that it was at her own request that the operation was performed. She is glad that it was done for she considers she has benefited by it, for among other things, it has cleared her head and relieved her of headaches. It now appears that she was suffering from a headache before the operation, although she gave no admission of its existence when previously questioned on the subject. On emerging from the state of confusion present on admission, she found she had a continuous sensation as of a tight feeling, a pressing deep pain at the back of the head. It was more severe than the other headaches and persisted until, but disappeared after, the nose and throat operation. She confirms her former statement that for three days before admission she had had continuous pressing frontal and vertical headaches, but these did not trouble her on passing out of the confused state. She had never experienced headaches before, nor had she been troubled with soreness of the head. During the period of their presence before admission, she felt more comfortable without a hat, but she can wear a hat now in comfort. There is now less nasal obstruction than formerly, and she can breathe better. She has had no cacosmia, no unpleasant tastes and no visual disturbances. She recognizes she was exalted before and on admission, but she feels now much more composed and happier. Objectively, she is intelligent, cheerful, helpful in the ward and displays interest and initiative and is sociable. Conduct in the hospital and outside on week-end leave is very satisfactory. Conversational capacity and memory now normal. Muscle tone very much improved as shown in general carriage and facial aspect where ptosis has practically ceased. Facial colour is much improved. Menstruation appeared for first time since admission from December 6th to 10th, without disturbance of mental state, pain or discomfort. Weight is 8 st. $6\frac{1}{2}$ lb. She is now well nourished. Peripheral circulation is improved, extremities are pink and warm. Blood pressure 126/68 m.m. Hg. Pulse rate 58 recumbent. Respirations still rather shallow, but better than formerly. Thyroid region full, neck measurement 32 cm. Three colon

irrigations during last month have given clear returns. Urine, 1020 acid. She says she feels better than at any time since she left secondary school two years ago.

December 10th, 1931: Discharged from hospital on trial in care of mother.

January 14th, 1932: Doctor's, mother's, and visitor's reports satisfactory. Discharged recovered.

CASE 13.

M.R., female, single, housekeeper, aged 46 on admission to a mental hospital on August 7th, 1923. Second certification.

History.—Family: Out of a family of five sisters and one brother, only the patient and one sister have been under certificate.

Personal.—When aged 21, patient was under certificate for a few months. On discharge from mental hospital she took up domestic work, continuing therein until present illness. Alcoholism denied.

Present Illness.—Following several attacks of influenza she had been in a depressed state for twelve months before certification, and after a further attack of influenza early in 1923 depression became worse and insomnia appeared. Another attack later in the year, which she describes as associated with low fever and fainting attacks, caused her "nerves to give way," "voices" developed and she became excited. She developed ideas that her employer was persecuting her and went to the police station on this matter on August 4th, 1923, demanding protection against him. There she stated that she "would put a bullet through his head" if she "had the chance." Her conduct and condition were such that she was taken to an observation hospital where she was found to be very excited and abusive. She chattered, sang and cried for no apparent reason, answered imaginary voices and gave expression to numerous delusions. These symptoms continued and she was admitted to a mental hospital on August 7th, 1923, where she continued noisy, restless, excited, hallucinated and deluded. She was homicidal, violent, destructive and her habits were faulty. Several times she attempted suicide by strangulation and precipitation. Her condition was classified as mania and necessitated continuous observation by day and night. On March 8th, 1926, she was transferred by order of a judicial authority, to the Birmingham Mental Hospital.

On Admission.—Mental State: She was completely lost in her recognition of time, place and persons, and she was wholly devoid of judgment and of insight into her condition. She chattered rapidly, incoherently and jerkily, only occasionally from the content of her utterances could it be deduced that she was making references to what she saw about her. Her appreciation of and her replies to questions were very poor. Her memory appeared a complete blank. She was very excited, restless, exalted, dictatorial and threatening; irresponsibly she struck at staff and other patients. Her attention was easily distracted and always her reactions were those of anger and aggressiveness. Left to herself she was observed to listen to and answer "voices." She was resistive to nursing and examination, destructive to bedding and furniture and her habits were faulty.

Physical State.—In contrast to the aggressive attitudes she displayed, she was poorly nourished, and her general vitality appeared to be much impaired. Height 5 ft. 2 in. Weight 6 st. 13 lb. Temperature 97° F. *Skin:* Thin and dry. *Circulation:* Heart. Diastolic murmur in aortic area. Aortic second sound roughened. Pulse 72. B.P. 126/92 mm. Hg. Arteries—slight sclerosis. Peripheral circulation, facial pallor. *Lungs:* Resonance impaired at left apex. *Mouth:* Lips dry and cracked. *Teeth:* Carious, loose and septic, a slimy pyorrhoea. *Nervous System:* A definite bilateral prominence of the eyeballs, thyroid not enlarged. Pupils contracted, equal, regular, react to light and accommodation. *Urine:* 1010, nil abnormal. *Gynaecological:*—Orifice intact. Corpus uteri, rather infantile in type, no other abnormality. *Blood:* Wassermann test negative. Widal test negative to all groups.

Course and Treatment.—The change of residence was without influence on the mental state. Calcium therapy was commenced. Calcium lactate was given by mouth, 40 grs. thrice daily, and in addition, from March 13th to the end of April, 1926, she received subcutaneous injections 5 cc. of colloidal calcium oleate daily. From May 21st to May 25th she daily received 5 cc. of a colloidal preparation of calcium oleate and iodine. The object of this extensive treatment with calcium was to induce focal reactions of a mild character around the gross oral sepsis, and so to minimize the exacerbation reaction following extraction and to stimulate healing. On March 22nd, 24th, 26th, April 6th, 23rd and May 21st, there were effected twenty-one extractions of loose carious teeth and roots. By July she was less restless, somewhat more amenable to nursing and less dangerous to those around her. Her temperature remained consistently low over a lengthy period of observation, varying between 96.8° and 97.6° F.

From July 21st to August 25th a course of non-specific protein therapy was given, using T.A.B. vaccine, intravenous injections were given at five day intervals. The maximum agglutinin response to these injections was: Typhoid 62; Paratyphoid A 625; Para. B 12; and Aertrycke 40/0 Oxford units. These values fell rapidly. Following this therapy it was observed that her conduct was on the whole somewhat improved.

During November, a second course of eight injections of T.A.B. was given intravenously. The maximum pyrexia obtained was 101° F. No noticeable change ensued in conduct, but at the end of December, 1926, her weight had risen to 7 st. 3 lb. During January, 1927, she was noted as still being noisy, mischievous, destructive and dirty in habits. The confusion was somewhat less, the auditory hallucinations still persisted, but instead of being dangerous as formerly, she was now good humoured. During the ensuing sunless months and until May, she had a course of graduated exposures to ultra-violet light, but neither these nor the summer sun caused any remarkable mental improvement, although the general physical state was slowly improving. She was still noisy, easily excited, mischievous, hallucinated and deluded, but less noisy and destructive than on admission. She now dressed fantastically, but withal tidily, and grimaced when addressed. During the following September she permitted an ear, nose and throat examination. Her general vitality had now improved, and her weight had risen to the maximum since admission, viz., 7 st. 4 lb. She now appeared to be a reasonable anaesthetic risk. On September 16th, 1927 under general anaesthesia a nasal sinus examination was made using the Watson-Williams technique. All the sinuses were found to be free from exudate except the left antrum which contained mucopus: this and the other cavities were irrigated with solution of biniodide of mercury. The diseased tonsils were removed by dissection. Bacteriological examination of the saline returns from the sinus explorations showed the presence of bacteria in all the cavities. Recovery from operation was uneventful. From now onwards she co-operated in weekly colonic irrigations. By the end of December, 1927, her weight had risen to 7 st. 6 lb., and by the end of January, 1928, a further definite degree of mental improvement was shown. She was now quiet and well behaved, clean in habits, only occasionally mischievous, pleasant in manner, assisting usefully in minor ward work under supervision and had begun to write letters to her people. At first these letters began sensibly, but became incoherent towards their termination. As time passed the incoherencies diminished. During the ensuing winter months, she was stationary mentally and physically.

With the spring of 1928 progress was observed, and by the following July definite convalescence was reached. She was composed and well behaved and beginning to converse intelligently. Her dress was no longer fantastic, habits were clean, she was pleasant in manner and helpful in her attitude to those around her. The prominence of the eyeballs was no longer noticeable, and her facial colour, mobility and tone were improved. Her general muscle tone had improved as shown by the erect and easy bodily carriage. The aortic diastolic murmur was no longer audible. During August she showed further progress and her weight rose to 7 st. 10 lb.

September 4th, 1928. *Review.*—Quietly behaved and quite composed she converses intelligently and relevantly. She has insight into her illness and is able to describe some of its details, although she has no memory of the major part. She is able, however, to remember that after the courses of T.A.B. her “head felt clearer” and that the “voices” became less intense, although they still persisted. She is quite emphatic on the point that the “voices” only ceased after the nose and throat operation and have not returned since then. She was unable to describe the characteristics of these auditory hallucinations, but remembered that they seemed in her head and were more marked on the left side. She feels composed and contented now, and there has been no return of the former terrible feeling of irritability. She has been out on leave from the hospital with her sister on several occasions and her conduct then was quite satisfactory. In the convalescent bungalow she has become a useful worker.

Discharge.—She was discharged to the care of her sister in September, 1928. In the following October her doctor, her sister and the hospital visitor reported satisfactorily concerning her, and she was discharged from the hospital books as recovered.

On February 2nd, 1929, her sister reported in reply to a query: My sister is very well indeed. Appetite is very good, sleeps well, bowels regular. Weight 8 st. 10 lb, (with clothes). General nutrition, colour and appearance, quite good. Works well. does shopping, including travelling by train and gives no cause for anxiety.

On October 8th, 1929, her sister reported further. “She is in perfect health, and feels better than ever and looks younger. She has taken a post as cook since June last, and is very satisfactory, her employers state they would be sorry to lose her. She is very contented and happy and comes to see me every week.”

September 15th, 1931, her sister reported: “My sister is keeping very well indeed, and is still in the same situation, and her employers are very pleased with her.”

GROUP IV.—*Cases in which Pyrogenic Non-Specific Therapy was given both before and after surgical treatment of Foci.*

These are cases where treatment by the more potent pyrogenic non-specific therapy has been attempted before surgical intervention has been adopted, and where satisfactory results have only accrued after a second, and post-operative, course of non-specific therapy has been completed.

In cases where such drastic treatment is required, the infection is usually of a very resistant character, such as the sequel of an infectious disease of childhood.

Two examples are given in Part II of the Annual Report of the Board of Control for 1930.

Case L.G.R. (p. 41 and 42) and Case N.T. (p. 15-18), represent two cases of persistent sepsis in young adults who made good recoveries, both mentally and physically following drastic treatment of this character. In both these cases, long established sepsis had been present.

Two cases are described in the present series.

In Case 14, it would appear that a persistent "rheumatic" infection was responsible for the appearance of symptoms to which the term "Neurasthenia" was applied and which later merged into definite psychosis, the whole known to have been developing over, at least, ten years.

Search for a responsible focus in the throat had been unfruitful.

Following admission and the treatment of dental sepsis, a course of T.A.B. vaccine was given; a focal reaction ensued in the tonsils, but the psychotic symptoms were unrelieved. A second course was given, again with a similar focal response.

The tonsils were then removed and the infected antra drained.

Mental and physical improvement only noticeable after the surgical removal of sepsis, appeared. A mild rheumatic iritis developed and disappeared.

Following another course of T.A.B., mental symptoms passed away.

In Case 15, injections of T.A.B. given intramuscularly prior to surgical intervention, caused no change in the mental state. During a course of colloidal sulphur given after operative action on oronasopharyngeal sepsis, improvement became noticeable in the mental disorder.

CASE 14.

J.J., male, single, labourer, aged 31 on admission to Mental Hospital on June 27th, 1929. First certification.

The father is the subject of chronic rheumatism, the mother is "nervous and excitable," a sister is under certificate.

Patient has been, since discharged from Army, the subject of neurasthenia and has attended all the clinics to which he could gain access, complaining of pains which as far as could be elicited were vague in character, variable in severity, fleeting in duration and illusory in location, sometimes being experienced all over the body, at other times confined to the left side of the body and perhaps especially to the upper limb, where the chief sites appeared to be the shoulder region and the ulnar distribution. Objectively no changes locally were found to correlate with the complaints either on clinical or radiological examination. As he was also the subject of long standing bilateral deafness, it was not easy to reassure him or convince him that there was nothing organically wrong with him. For the last five years he has been under the care of his present medical adviser whom he has visited at least twice, and on some occasions three times, weekly. Medicines failed to relieve him. His numerous complaints included that of sore throat, but, on no occasion, was the practitioner able to find any evidence of serious tonsillitis. A very mild type of congestion, such as could be attributable to smoking, was the maximum disturbance presented. Nevertheless the practitioner caused him to be examined by a laryngologist who, however, was only able to confirm this finding. He did not consider the condition of the tonsils to be of sufficient severity to be responsible for the symptoms, and was therefore unable to recommend their removal. As time went on the patient became more debilitated and depression appeared and later became severe. On medical examination he was found to be depressed and hypochondriacal; he talked of being in "mental agony all the time". He was sure

that "something had happened in his brain and in his abdomen to cause his feelings, and that something was moving in his head," but, beyond vague statements of this character, he was unable to describe his illness further. He was convinced that he was ill, that "nothing would do any good," that he was going to die in a few hours and so he threatened suicide by cutting and poison.

On Admission.—Height 5 ft. 8 in. Weight 10 st. 1 lb. No pyrexia. Averagely nourished. A uniform enlargement of the thyroid—parenchymatous goitre—produced an appreciable swelling in that region. A chronic papulo-pustular eruption was present on the chest and back. Heart and abdominal viscera appeared normal. A few moist sounds were heard in the left chest. No cough or sputum. A right blepharospasm and left ptosis and a slight tilt of the head to the left. Deafness bilateral. *Urine*: 1018, nil abnormal. Some dental sepsis. *Blood*: Wassermann test negative. Widal test showed some persisting agglutinins to Typhoid and Para A from Army inoculation, 27 and 16 Oxford units respectively. Mentally he was depressed and hypochondriacal, stating that "something has gone wrong in his brain and abdomen producing paralysis of the left side," this caused him to be in "constant mental agony" and to have no confidence in himself. Conversational capacity much reduced, and except on the subject of his aches and pains, it was impossible to arouse his interest. His description of these was very limited and confined to the use of a few words: thus, his description of the condition of his left limbs was that they are "no good," "paralyzed," "useless" etc., when it was demonstrable that there was no articular, muscular or neuromotor disturbances present.

Course and Treatment.—The faeces were found to contain *Streptococci Faecalis* and *Infrequens*. Dental treatment was for the immediate moment confined to the extraction of two roots. Other doubtful teeth were conserved.

On July 3rd, Ear, nose and throat examination found: Ears—chronic middle ear deafness of severe degree. Both drums opaque and retracted and on the right a scar behind and below the umbo of the malleus. Nose—anterior rhinoscopy; left normal; right, yellow crusting below. Posterior rhinoscopy, pus on the posterior ends of the inferior turbinates, especially the left. Nasal sinuses—radiographic examination, all clear. On transillumination, frontals dull, antra dark. Tonsils—normal.

On July 17th, under local anaesthesia, patient co-operated in a nasal sinus examination with the Watson-Williams technique. A small amount of mucopus was found in the left antrum, the other cavities were clear, all were thoroughly irrigated with antiseptic solution. Colon irrigations brought away much mucopus. As there seemed no evidence of gross closed sepsis, it was decided to employ non-specific protein therapy and from July 29th to August 5th, he received eight injections of T.A.B. vaccine intravenously. The doses, 0.1 c.c., 0.2 c.c., 0.3 c.c., 0.4 c.c., 0.6 c.c., 1.6 c.c., 2.4 c.c., 3.0 c.c., evoked rigors and maximum temperatures from 103° to 104.2° F., with a maximum pulse disturbance of 132. A radiographic examination of the jaws revealed a buried dental root.

On August 27th a well marked follicular tonsillitis appeared, temperature rose to 101.4° F, pulse to 114, the cervical glands were enlarged.

By September 5th the throat was much cleaner and there was no pain on swallowing.

September 11th an Ear, nose and throat review found: Crusting on the right side over the mid and inferior turbinates, on the left side the turbinates were clear. The tonsils were found to be fibrotic but normal. Nasal inhalations of steam were given and tonics.

On September 26th the agglutinin response to the T.A.B. course was found to be Typhoid 570. Paratyphoid A, 333 and Para. B, 40 Oxford units.

On September 20th and October 4th, dental treatment was completed by the extraction of the buried root and three other teeth which were now considered to be definitely septic.

At the end of September his weight was 10 st. 10 lb. Mentally there was still no change in his condition. He was still peevish, fretful, depressed and complaining, amongst other complaints was that there was cracking in all the joints from the head downwards. Appetite was fair but sleeping was poor. He was uninterested in any occupation.

From November 2nd to 9th a second course of T.A.B., consisting of eight injections given intravenously, employing similar doses to those of the first course, was given. Maximum pyrexias were from 101.4° to 103.6°.

At the end of December his weight was 11 st. 6 lb. During December and January, a course of ultra violet therapy was given, but there was no change in the mental state and his pains continued. Radiographic examination of the neck and chest, especially for accessory cervical rib was unproductive.

On February 12th, 1930, a further Ear, nose and throat review found pus in the right tonsil. No change having ensued in his mental state in the interval, on March 12th under general anaesthesia the tonsils were removed by dissection; both were fibrotic

and adherent and an old quinsy was present in the right. Both antra were explored, found infected and drained intranasally. Convalescence from the operation was normal. There was no immediate or dramatic effect noted on the mental state, but gradually an improvement became manifest. He showed less mental fatigue, was able to express himself better, took an interest in the ward and voluntarily began to help. Still hypochondriacal, but his complaints became less frequent than formerly. Early in May he developed a low grade rheumatic iritis of the left eye. This gradually subsided under treatment and by the end of May vision for both eyes was 6/5.

In the early part of June he was given a third course of T.A.B. vaccine, on this occasion the five injections were given intramuscularly. The doses were from $\frac{1}{2}$ c.c. to 3 c.c. The highest temperature, 101.8° F. followed the last dose. Prior to this course the agglutinins in the blood had fallen on June 2nd to Typhoid, 63, Para A, 25, Typhosus O, 4, Oxford units.

On June 19th, after this course, the units were Typhoid, 1430, Para A, 250, Para B, 233, Typhosus O, 13. These injections had no untoward results on the eyes. There was now no doubt about the improvement in the mental symptoms, nor that this had followed the nasopharyngeal operation. The ward nursing notes may be usefully quoted here: "Formerly he was a depressed, miserable, complaining and suspicious person who resisted treatment and threatened anyone who offered it. He is now a good patient, quiet, amiable, sociable and has a sense of humour, works well in the ward. The shoulder pains, stomach pains, etc., before complained of have not been heard of during the last few weeks."

At the end of July his weight was 11 st. 11 lb. He was now offered the opportunity of discharge to home care to which he had been on week-end leave, but he and his relatives felt that confidence in himself, which he was regaining in the mental hospital, might be vitiated by too early discharge and desired to continue treatment. He was now sufficiently interested to work voluntarily and regularly in the hospital gardens. His weight now stabilized at 11 st. 8 lb.

November 13th, 1930: He was discharged recovered.

July 1931: His doctor states that after seeing him shortly after discharge from Hospital, the patient has not called on him although he is still on his list. His psychotic state appears to have passed away. Meeting him on one occasion patient stated that he had occasional twinges of pain in the left shoulder, but not sufficient to complain seriously about.

February 1932: His doctor has nothing to add to the previous report.

CASE 15.

8103, H.C.B., male, single, laboratory assistant, aged 20 on admission to mental hospital on May 11th, 1931. First certification.

History: Family.—No psychotic heredity. Parents alive, both aged 29 at birth of patient. Paternal grandmother aged 84 and grandfather 76 at death. Maternal grandmother alive, 70, grandfather died at 45 of apoplexy. Patient has a brother aged 14 $\frac{1}{2}$ and sister 11 $\frac{1}{2}$, both well.

Personal.—Full term child. Normal delivery and childhood. Elementary school at 5 passed on to secondary school, leaving at 16 $\frac{1}{4}$ years. At 17 took up work as laboratory assistant, worked at evening classes and passed matriculation and intermediate science examinations (London) in 1930. Normal temperament, sociable, he was actively interested in his work and in recreational pursuits, steady, well behaved and methodical. Consumption of tobacco very limited. He had been subject to "influenzal colds."

Present Illness.—Regarded as of only four days' duration prior to admission. He had appeared to be in his usual health until May 5th, when he had a slight accident, hurting his forehead against an iron bar, but he was not unconscious, nor did a bruise result, the forehead was only sore afterwards. On May 9th he seemed a little "strange," forgot an engagement and similarly on the following day when he went out cycling for the day from 10 a.m. to 6.30 p.m., an unusual action. It was whilst returning home from this cycling tour that he encountered another accident. A car passing him caught his back wheel and as a result he was pitched over the handlebars of the cycle on to the kerb. There was no head injury, no loss of consciousness, and he reached home appearing much as usual. Later it was noted that he was obsessed with unusual ideas, e.g., he considered humanity was progressing too rapidly, that the end of the world was nearer than might be expected as scientists were acquiring much knowledge and would soon split the atom. Later mental confusion appeared, and by next morning was well established. He chattered incoherently about people having influence over him and of being saved.

On Admission.—*Mental State:* Confusion, triple disorientation, apparently auditory hallucinations; stated that God had told him that things were all wrong.

Ideation retarded. Replies to questions, when obtained, were monosyllabic and given after a long latent period. Attention poor. Suspicious. Occasionally obeyed commands, but was generally non-co-operative and resistive. Made an impulsive attack on male nurse. Difficult in taking food, required spoon feeding. Wet and dirty in habits.

Physical State.—Height 5 ft. 9½ in. Weight 9 st. 0 lb. Temperature 98·2° F. Poorly nourished. No external sign of injury. Dry skin. Joints free. Thyroid not enlarged. Cardiac limits and sounds normal. B.P. 130/78 mm. Hg. recumbent. Peripheral circulation, pale face, cyanosed hands, although a fairly warm day. *Lungs*: Air entry poor, otherwise, nil. *Mouth and Pharynx*: Both lips thick and everted. Tongue, thickly coated and dry. Well marked pyorrhoea. Mucopus in pharynx. Palate high and arched. Cacostomia denied. Pupils equal in size, react equally to light, accommodation and consensually. Bilateral ptosis. Elevation of left eyebrow. Admits occasional frontal headaches and sick feeling. ?Migraine. Wax both ears. No bad tastes. Plantar responses both briskly flexor. Knee jerks equal. No clonus. Sphincters controlled. *Muscular System.*—Development fair, power poor. *Abdominal Viscera.*—Nil abnormal detected. Has complained of some hypogastric pain on micturition, but no evidence of disease found. No evidence of venereal disease. *Urine.*—1020 acid. Nil abnormal found. *Blood.*—Wassermann test, negative. Widal test, all negative except 8 Oxford units positive to Flexner Y. Cerebrospinal fluid—Wassermann test, negative. Colloidal gold test negative. Cells, 35 per cub. mm. Bacteriological examination of faeces—streptococcus saprophyticus. Streptococcus faecalis. Bacillus Friedlander. Ophthalmological examination—both discs hyperaemic but margins fairly clear. Retinal vessels slightly distended. Dental examination—serious oral sepsis. Ear, nose and throat examination—ears, wax both. Rhinoscopy. Anterior. Deviation of septum to left posteriorly; right, clear. Posterior, small adenoids, otherwise clear. Tonsils, buried, normal. Nasal sinuses, transillumination. Antra, dull. Frontals, dim. Radiography of skull—no evidence of injury.

Progress and Treatment.—After a preliminary treatment with calomel and mist, alba, he was put on calcium lactate solution. He continued to be difficult with food, only taking it after considerable persuasion. On May 16th he had reached a stuporose state and required spoon feeding. On that date and 16th and 17th, he was given a short course of T.A.B. vaccine intramuscularly, the doses being 0·5, 1·0 and 1·5 c.c. There was no pyrexial or other obvious or immediate reaction. Colon irrigations given on May 19th, 27th and June 9th, removed large quantities of mucopus of a very stringy character. During this time he remained in a semi-stuporose state and it was necessary to wash, to dress and to feed him and to place him on the lavatory. Speech was quite absent. He was no longer impulsively violent but was passively resistive and his manner sullen. He was now able to go out into the ward garden, but the only manifestation of his appreciation of environment was pilfering the property of other patients when opportunity presented. Two further colon irrigations were given on June 18th and 23rd, the returns were foul and contained much mucopus. So far medicinal treatment had not been followed by appreciable improvement.

June 26th: Under general anaesthesia. Dental—sixteen extractions. His weight at the end of June was 8 st. 10 lb. Medicinal treatment was continued. Colon irrigations on June 29th, July 3rd, 6th and 20th removed large amounts of mucopus. Examination now found a diastolic murmur, loud and blowing, loudest to the left of the sternum, but transmitted upwards to the aortic area and to a less degree out towards apex where it was almost inaudible. B.P. 120/80 mm. Hg.

On July 21st: An injection of 20 c.c. colloidal calcium oleate was given and on July 22nd, under general anaesthesia, a nasal sinus investigation using the Watson-Williams technique was made. The anterior walls of the sphenoidal sinuses were found to be too dense to permit entry; nor did the ostia permit it. Both ethmoids contained mucopus, especially the left. The antra were clear. The cavities were thoroughly irrigated with solution of biniodide of mercury. Recovery from the anaesthetic and operation was uneventful. His weight at the end of July was 8 st. 13 lb. A review of the dental state on August 14th and again on the 28th found the septic process had involved additional teeth; seven extractions were made. Colon irrigations given on August 13th, 18th, 25th, 31st, found a diminishing amount of mucopus. This improved finding also obtained at four irrigations during September. During this time his mental state showed no essential change. Mute and apparently deeply confused he still required spoon feeding and nursing attention for everything. At night he slept fairly well, occasionally restless, tending to wander about in a lost manner. He no longer displayed violence, but was resistive to nursing attention. Hands still cyanosed. Weight at end of September, 9 st. 0 lb.

From October 5th to 18th a course of deep intramuscular injections of colloidal sulphur (aqueous) were given and evoked maximum temperatures, as under:—October 5th, 1 c.c., 101°F.; October 8th, 2 c.c., 103·8°F.; October 11th, 3 c.c., 104°F.;

October 15th, 4 c.c., 103.8°F.; October 18th, 5 c.c., 102.8°F. The maximum pulse disturbance was 124 in relation to the acme of 104°F. It was during this course that a definite improvement occurred in the mental state. From October 9th he began to speak. At first a few words, then later a few short sentences at intervals. Concentration capacity however soon tired. At the end of the course he appeared much less sullen, answered questions but did not volunteer conversation, was able to interest himself in books and fed and washed himself. This improvement lasted until October 23rd, when he gradually lapsed back and required attention for feeding, washing and dressing. It was now very difficult to elicit speech. With this relapse was associated a morose, sullen manner. On one occasion he struck another patient. His physical state was improving, and at the end of October his weight was 9 st. 5 lb. There was also an improvement in the peripheral circulation. This relapse, which appears to have been the result of climatic change, lasted until the middle of November. Gradually, then, speech and capacity to care for himself returned, confusion diminished and he was able to assist in the ward. Progress was now sustained and by the end of November he was willingly doing light work in the garden and helping in the ward on return. Habits now were quite clean. Conversation cheerful and sustained. Taking food well, no insomnia. The returns from colon irrigation were now clear. Facial colour and tone much improved. Volunteered that he felt "much better about the nose, especially on the left side," formerly the left airway seemed quite blocked, but is now much better. Considers he came to himself during the course of sulphur therapy. B.P. 146/84 m.m. Hg. recumbent. His weight at the end of November was 10 st. 12½ lb. Improvement continued during December, during which he received a course of eleven exposures to ultra violet light; he continued at light work out of doors and displayed normal conduct in the hospital and on leave at week-ends. Two teeth, upper left wisdom and lower left canine, now commenced to ache and were extracted on January 8th, 1932.

Review.—Early January, 1932: Weight 11 st. 6 lb. Ear, nose and throat—anterior rhinoscopy, clear. Posterior rhinoscopy, slight excess of mucus left side, otherwise clear. Tonsils, healthy. Ears, both normal. Nasal sinuses, transillumination. Antra fair. Frontals both clear. Bacteriological examination of faeces. B. Coli aberrans. Ophthalmological review—no change to previous report. Urine—acid 1010, nil abnormal. B.P. 150/78 mm. Hg., recumbent. Cardiac—murmur in tricuspid area loud and blowing, but less marked on assuming upright position, conducted to aortic area. Other areas no murmurs. Facial mobility, tone and colour good. Hands pink. General muscular tone and power much improved. Normal orientation. Conversational capacity good. Brisk and alert. Volunteers information and is able to describe the effect of the several kinds of treatment he has received, and to confirm and to add, to the details of history already received. He recognizes that he has been mentally and physically ill and considers that he is now better in both capacities than he was before admission. He realizes that he had been irritable and difficult at home for six months before admission although he had not assaulted anyone. For the last four years and associated with constipation he has had headaches, roughly fortnightly. For an ill-defined period he had had indigestion before admission, the attacks were not serious; they recurred at irregular intervals, but did not prevent him taking food. For several years he has been troubled with sore throat three times a year, usually requiring medical treatment. He had an attack associated with tonsillitis in the latter part of 1930 which lasted a fortnight. Otherwise he has not had influenza or been confined to bed with any acute febrile illness. He had not been sleeping well for some time before admission and especially was this the case for the last three nights. He has only the vaguest memories of the visit of the medical examiner and none of what he said on that occasion nor of the circumstances of the early part of his stay in hospital. He considers his memory has been continuous only since the last five weeks, for, although the general mental improvement began during the sulphur course, memory is patchy for that time and blank for the period of the relapse and again patchy for another period and only became continuous since the end of November. He has had few sensory disturbances in relation to the illness. He can recall no disturbances of taste, vision, hearing nor smell. He gives satisfactory answers to examination with the test odours: he has not experienced headaches since coming to himself. Volunteers that he can now breathe much more easily than formerly through the nose and recognizes that before admission he had some, particularly left, nasal obstruction and nasal catarrh. Both are now much relieved. Generally he feels much stronger and less easily fatigued. Objectively he is cheerful, willing, and works in and out of doors with interest and initiative.

January 14th, 1932: Went out on trial in care of parents.

February 11th, 1932: Reports from his doctor, hospital visitor, and relatives, satisfactory. Discharged recovered.

GROUP V.—*Cases in which the infective process was treated by an Autogenous Vaccine.*

It is supposed that during the reactivation phase of the focal non-specific reaction, some digestion of the residual bacteria by the tissues of the focus occurs and therefore that a certain amount of autogenous vaccination takes place under these circumstances.

Whether based on an hypothesis of this character or not, it may be urged that the value of treatment by autogenous vaccines should be investigated.

It is not the present intention to go further into this question than to remark that to obtain from these patients one or more organisms for the purpose of autogenous vaccine, which can conclusively be shown to be involved in the production of the toxæmia, is by no means easy and in most cases is impossible. It has already been pointed out that, in many cases associated with an increase in the mental symptoms, there is a decrease in the capacity of the infected tissues to discharge the infection and so with diminished discharges the possibility of obtaining the infective agent is reduced correspondingly. Even if such an agent can be found in discharges, it then has to be shown that it is involved in producing the toxæmia of the mental disorder.

If such an organism is not involved in producing the toxæmia, then its value in a vaccine approximates to that of those which have not originated from the patient's body, such as the T.A.B. organisms, for much if not all its capacity may be to effect only a non-specific reaction.

One case is described in this series where autogenous vaccine was employed in the treatment of the mental disorder.

In this case—Case 16—two months were allowed to elapse following the cessation of the use of an autogenous vaccine before other, non-surgical, treatment was commenced, but there was no amelioration of the condition. Nor did any useful result accrue from a subsequent course of pyrogenic non-specific therapy. For about five years any possible benefit which could proceed from the non-pyrogenic autogenous vaccine course and from the pyrogenic non-specific therapy course had the opportunity of appearing. Six months later, but after surgical intervention in the nasopharynx and another course of non-specific protein therapy, a definite mental and physical improvement ensued and three months later she was discharged recovered.

One may, therefore, conclude that the successful employment of autogenous vaccines to combat mental disorder arising from chronic infective processes requires similar conditions to obtain in the foci of the Chronic Infective Process as does the use of non-specific therapy. There is no virtue in autogenous vaccines in the face of defective or deficient drainage of the responsible foci.

CASE 16.

6045, E.B., female, single, housekeeper, aged 44 on admission to mental hospital on August 5th, 1923.

History.—*Family*: Father aged 86 (1931), living with second wife in country. Mother died in 1894, aged 50, of heart disease. Four brothers aged 60, 59, 48 and 46, all alive, well and in regular employment, the first two on railway and the younger pair in motor works. Three sisters: A, aged 54, alive, married, four daughters, has not been very well, associated with climacteric, but is now improving; C, aged 51, under home and institutional care since aged 44 for chronic melancholia and cardiovascular disturbances; D, youngest, aged 45, alive, at present has good physical and mental health, had a nervous breakdown at 35 which lasted for about eighteen months, she then gradually improved.

Personal.—Standard VII at 13 when she left school to help her mother in the home, later became a housekeeper, retaining one situation for 11½ years. On the death of her employer she joined with the younger sister in a drapery business in Birmingham. In July, 1923, she suddenly developed a depressed state and went to stay with her

father in the hope that the change would be beneficial. The symptoms, however, progressed and she became more incapable of looking after herself. She went about with her head down muttering that she had ruined everyone, that all would have to go to prison and that someone was going to cut her into pieces. She was sleepless by day and night, refused food and took no interest in her surroundings. The symptoms continued and she was admitted to mental hospital, where her condition was found to be melancholia. She was depressed, miserable and at times lachrymose, she refused to converse other than to express delusions of personal unworthiness. She could not be persuaded to take up any employment and it was considered necessary to keep her under continuous observation as she made attempts at suicide by tying tapes round her neck. This information, together with the opinion that she had shown no improvement since admission, was kindly supplied by the medical superintendent of the mental hospital on the transfer (for settlement reasons) of the patient to the Birmingham mental hospital on July 24th, 1925, where on examination the following observations were made.

Physical State.—General vitality appeared poor. Height 4 ft. 11 in. Weight 6 st. 5 lb. Temperature ranged from 96.6° to 97.6°F. General nutrition fair. Skin dry. Hair on upper lip. Tonsillar lymph glands enlarged. *Heart*: Apex beat 5th space, 1 in. to left mid clavicular line. First mitral and second aortic sounds roughened. Diastole shortened. Peripheral circulation cyanotic. Pulse 96. B.P. 155/110 mm. Hg, recumbent. Arteries appeared to have some sclerosis. Chest expansion poor. Breath sounds faint. Resonance impaired slightly at both apices. No adventitious sounds. Mouth—two upper canines grossly loose and very septic. Tongue coated. Tonsils, chronic follicular tonsillitis. Pupils normal. Abdominal reflexes very brisk. Left knee jerk exaggerated. Other tendon reflexes difficult to elicit. Clonus absent. Sphincters under control. Abdominal viscera appeared normal except there was some apparent tenderness over McBurney's point. No evidence of gynaecological disorder. *Urine*: Acid 1020, nil abnormal. *Blood*: Wassermann test negative. Widal test, negative to all groups. Bacteriological examination of throat swab found—streptococcus pyogenes, streptococcus subacidus, streptococcus albus. Gastric contents. Chemical examination. 30 minutes after meal, free H Cl. 27, total acid 62.5; 60 minutes after meal, free H Cl., 37, total acid 65.5; 90 minutes after meal, free H Cl., 51, total acid, 77.

Mental State.—Melancholia. Facial aspect sad, occasionally lachrymose. Fearful, unduly apprehensive. In bed she lay in a curled up position; when up and dressed she sat or walked with drooping shoulders, head forwards and downwards, elbows flexed, carriage showed general stiffness and restriction. At times agitation was displayed, but this was also limited and restricted by general muscular weakness. Pronounced psychomotor retardation. Conversation not offered, no reply obtained to questions, but she moans a few words occasionally, such as "Oh God, what shall I do." "I wish I was dead." No sensory disturbances or hallucinations elicited. Uninterested in surroundings. Some passive and occasionally active resistance offered to examination and nursing, to both of which she was quite unhelpful and generally non-co-operative. Difficult with feeding, required to be hand fed. Habits clean.

Progress and Treatment.—Calcium lactate thrice daily was prescribed. A subcutaneous injection of 5 cc. colloidal calcium oleate was given and the two grossly loose septic teeth were removed. When the gums had healed a swab was taken of the tonsillar exudate and from the cultures an autogenous vaccine was prepared. In the hope that a period of rest, nursing and feeding would assist her nutritional state and the action of the vaccine, she was given this treatment. The calcium lactate therapy was continued and cod-liver oil and malt medication added. From September 10th to November 23rd, 1925, this autogenous vaccine was given, sixteen injections, five daily intervals. The graduated dosage caused no pyrexial response, temperature remained below 97.6° and more usually at 97° F. By the end of the year there was no change in her mental or physical state. Her weight was 6 st. 6 lb. Menstruation occurred regularly and it was noticeable that all her symptoms, especially cyanosis, general rigidity and emotional display were always much worse before as well as during the periods. Miserable, whining, completely self-centred, it was impossible to get her to converse or even to elicit any indication, much more a description, of any aches or pains she experienced. She was still difficult with food, requiring hand feeding, but would frequently snatch and ravenously eat identically similar food placed before other patients. Later, on recovery, it was ascertained that this paradoxical action was determined by her idea that the food allotted to her was poisoned, whilst that given to other patients was, in her view, obviously not poisoned. No encouraging result having followed from the use of the autogenous vaccine it was decided to employ non-specific protein therapy and to continue the nutritional treatment. From January 25th to March 1st, 1926, she received eight intravenous injections of T.A.B. vaccine at five daily intervals. The doses employed were: January 25th, 300 million; January 30th,

500 million ; February 4th, 900 million ; February 9th, 1,800 million ; February 14th, 2,500 million ; February 19th, 4,500 million ; February 24th, 7,500 million ; March 1st, 12,500 million. Pyrexias followed these injections. Her weight fell during February to 5 st. 12 lb., but in the following months increased gradually, so that by the end of June it was 6 st. 8 lb. During this time examination of the agglutination response to the T.A.B. vaccine was made. The highest values in Oxford units were : *B. typhosus* 266 ; *B. paratyphoid A.* 75 ; *B. paratyphoid B.* 1,000. At the period of the maximum response, the latter part of February and the early part of March, agglutinins to *B. Gaertner* and *B. Aertrycke* made a transient appearance, reaching a maximum of 38 and 50 units respectively. By June these values had fallen to *B. typhosus*, 17 ; *B. para A.* 13 and *B. para B.* 31, whilst there were negative findings to *B. Gaertner* and *B. Aertrycke*. During the menstrual phase in February, and during that phase and the premenstrual phase in April, she was noisy with her emotional display. In March the flux did not appear, and in relation to the appearance of the periods in May and June there was less emotional disturbances, but during the subsequent months the premenstrual and menstrual manifestations of emotional disturbance were very pronounced.

Essentially therefore non-specific therapy, like autogenous vaccine treatment had failed to produce any change in the mental state. She remained very much depressed, fearful and agitated, and, as formerly, unable to look one in the face when addressed. She frequently called on God to kill her, but nevertheless did her best to avoid being poisoned, as she explained later she feared, at this stage, was intended, by demanding and eating oranges. She considered that it would be more difficult to tamper with fruit of that kind than her ordinary food. The tonsils were still enlarged, and the crypts contained pus, but it was considered that the circulatory condition would not tolerate anaesthesia and surgical interference. The lungs and abdominal viscera showed no sign of active disease.

During July, the special rest treatment was brought to a close. She had gained weight and was taking food better. The nutritional improvement was maintained during the remainder of the year and at the end of December, 1926, her weight was 6 st. 13 lb. During 1927 nutritional improvement continued and during July and August she reached 7 st. 4 lb., but by December her weight had fallen to 6 st. 12 lb. Whilst there was a diminution in the severity of the agitation she still remained profoundly depressed, lacking in interest, and could not be persuaded to take up any employment ; she was just able to dress and to feed herself. She sat whenever opportunity offered rather than walk and strenuously objected to attempts to get her to take exercise ; even on a cold day she preferred to sit rather than move about when out of doors. Throughout the illness her movements were slow and stiff, the head carriage whether sitting or standing was forwards and downwards. Although otherwise clean in habits she usually allowed drops of watery mucus to collect and remain at the tip of the nose rather than make an effort at removal. Conversation was never voluntarily offered nor could her relatives get speech from her.

The loss of weight noted at the end of 1927 continued during 1928, and by August her weight was 6 st. 4 lb., a loss of a stone during twelve months. During March, April, May and June she had a course of ultra-violet light, weekly exposures. During July she was vaccinated against smallpox, the process taking a normal course. During the remainder of 1928 weight varied between 6 st. 9 lb. and 6 st. 7 lb., but during March, 1929, fell to 6 st. 5 lb. From this time she gained again, and by November had reached 7 st. 4 lb. During 1930 nutrition was less unstable, weight varying only between 6 st. 12 lb. and 7 st. 2 lb. Menstruation, during these years, had continued to appear, generally on a 28 day, but occasionally on a 21 day basis, the flow lasting from two to six days. Her age was now 51 years.

The mental state still showed no real improvement. She was still deeply depressed and asocial, she neither spoke to, nor looked at anyone, and when addressed, her replies, if obtained, were monosyllabic and barely audible. Apparently quite oblivious to her surroundings it was impossible to obtain her interest in anything outside herself. With unvarying regularity it was noted that her emotional state was much worse during the premenstrual and menstrual phases when her display of agitation was very pronounced. She wept, wrung her hands and moaned. On some occasions the emotional exhibition was maximal during the period of the flow, whilst at other times it was more insistent during the premenstrual phase. Her appetite was now good, and she was sleeping better than formerly. The circulatory tone was still poor. During the latter part of 1930 her general muscular capacity appeared stronger than it had ever been since admission, although it was certainly far from an average normal. There was now less tendency to sit the day through, and she was more frequently moving about, albeit stiffly, slowly and with downcast depressed mien. She even helped a little in the ward during non-menstrual phases, but it was impossible to accelerate her speed, either in interest or movement. She was less fearful.

She was now tending to become partially useful, but was certainly not recovered, and, although she was now less of a nursing anxiety than formerly, she was physically and mentally in an enfeebled state. There was every reason to consider that she would continue in this state.

On December 31st, 1930, she co-operated in an Ear, nose and throat examination when the following observations were made: Anterior rhinoscopy—mucopus on floor of nose, right side. Posterior rhinoscopy—right inferior turbinate enlarged. Tonsils—liquid pus in both. Ears—normal. Nasal sinuses—transillumination. Frontals both dull. Antra, fair, equal. During January, 1931, the very relative general improvement was continued. A bacteriological examination of the faeces found *Bacillus Friedlander* and *Streptococcus faecalis*.

A physical examination found: B.P. 126/88 mm. Hg. recumbent. Left limit cardiac dullness 10 cm. and right limit 2 cm. from midline. The first mitral sound increased, and a very soft systolic murmur was present. Rate 74 recumbent, regular except for extra-systoles, six to the minute. Lungs, clear. Urine 1030, acid, no abnormal constituents.

On February 2nd, 3rd, 4th, 10 cc. colloidal calcium oleate were given by intramuscular injection.

February 4th, 1931: A nasal sinus investigation was made under a general anaesthetic and as she tolerated these procedures so well the tonsils were also dealt with. Nasal sinus investigation, using the Watson-Williams' technique, found: Sphenoids—left, $3\frac{2}{3}$ in. Right, $3\frac{1}{2}$ in., no exudate. Ethmoids—no exudate. Antra—left, no exudate. Right, infected. The bony walls of the right sphenoid, ethmoids and right antrum were very porotic. All the cavities were irrigated with antiseptic and the right antrum was drained intranasally. The tonsils were removed by dissection. Bacteriological examination of the washings from these sinuses gave the following results: Controls sterile—anaerobic cultivation of washings, sterile. Aerobic cultivation—left sphenoid, staph. albus. Right sphenoid—sterile. Left antrum, *B. Hofmann* and *Pfeiffer's bacillus*. Right antrum, staph. albus. There were no untoward post-operative sequelae. Temperature rose to 100.2° F. on the night of the operation and again to 99.2° and to 99° F. on the two following days, but thereafter varied between 97° and 98.4° F. No remarkable mental change followed this treatment during the ensuing six weeks. Menstruation was in abeyance during February, but returned on March 15th, but had ceased on the 18th, depression being pronounced throughout. From March 19th to 28th a course of T.A.B. vaccine was given. Two injections of $\frac{1}{2}$ cc. and 1 cc. given intramuscularly on 19th and 20th did not evoke a pyrexia above 99° F. On 22nd, 100 million given by intravenous injection evoked a pyrexia of 102° F. with a secondary rise to 100° F. On 24th, 150 million similarly evoked a pyrexia of 102° F., but on 26th, 250 million was only followed by a rise to 100° F. Associated with this last injection the pulse became very small, and no further injections were given. Menstruation had appeared again on the 24th, and lasted until the 26th, and the reappearance of this function was undoubtedly related to this particular circulatory lapse. Her weight at the end of March was 7 st. 5 lb., the highest yet recorded.

During April, May and June no essential change occurred in the emotional state; she continued depressed. This symptom became intensified prior to, and during menstruation, which still continued to appear. A definite circulatory improvement was now slowly developing. The heart sounds were stronger. Her colour was rosier and there were no extra-systoles. The pulse 68. The general muscular tone was also improving. She co-operated in colon irrigation, but the returns were relatively free from exudate. Her weight now appeared to be stabilized round 7 st. 3 lb. No change to attract attention occurred during July and early August, but a marked improvement became obvious in her emotional state on and from August 14th. She displayed more interest in surroundings and became active in helping in the ward. Menstruation occurred on August 31st, lasting for four days, and was not associated with any disturbance of the emotional state. Thereafter the amenorrhoea of the menopause ensued and was accompanied by increasing mental and physical activity. She was amiably inclined towards and conversed with those around her, willing in her attitude to work, and for the first time since admission wrote letters of a cheerful character to her people with whom she conversed on their visits. Her general muscular tone improved, and during September her weight rose to 7 st. 8 lb., and in October to 7 st. 11 lb. She now took an interest in work, especially sewing. She asked for work in a normal manner, and on being given it, proceeded to deal with it correctly, without having to be shown what to do, displaying a proper interest and activity in its execution.

November, 1931: *Review*:—Recalling her previous condition of physical and mental incapacity and misery and its duration her present state is certainly remarkable. She now converses normally, is able to look one in the face whilst doing so, is able to

describe the onset and circumstances of her illness and to supply in an entirely credible manner much of the information which has been incorporated in the foregoing history. She is now fully orientated and recognizes she has been mentally ill and that in her condition she needed institutional treatment. She had never had a day in bed since she had measles as a child until she went to the mental hospital, and until July 10th, 1923, she had been, she considers, in normal health, always hard at work. On Saturday 9th, she as usual, had been helping her sister in the shop and her appetite and sleep had been quite good. On the following day she experienced the onset of the feeling which was to continue until this year, that of general muscular weakness and continual tiredness. She was quite unable to work, she felt she had lost the power to work; although she was able to stand and get about slowly, she felt a complete loss of normal freedom of muscular activity, she wanted to work but could not make the effort. Associated with this feeling of abnormal fatigue, were depression, insomnia and anorexia. As these symptoms did not improve she went on July 24th, to stay with her father in the country in the hope that a change of air would do her good but as she now fully recognizes, she became worse and passed into a state in which she was physically and mentally incapable of caring for herself. This state continued in her opinion, until the later summer of this year when she herself recognizes she began to come to herself and definitely to improve, mentally and physically. During the winter prior to the onset of the illness she had kept well and had not been troubled with sore throats, tonsillitis, colds or influenza. She had years before this occasionally had a sore throat, but even then very rarely. Neither had she been subject to rheumatism, but one of the discomforts she experienced throughout the illness was pains in the limbs and back of a rheumatic character and of varying intensity, some days better or worse than others. Also affecting the general musculature was a feeling of general rigidity and stiffness which came on soon after the onset of the illness. This increased later and prevented her moving, she was thus unable to raise her head from her chest. All these muscular discomforts, weakness, pains and rigidity passed away during this summer and since then she has experienced an increasing strength and cheerfulness and joy in life, which is now worth living. She protests she never really intended to injure herself as she was too much afraid, but admits she made futile attempts at suicide. She has no memory of abdominal pain nor of indigestion nor has she had appendicitis nor urinary troubles. She had no toothache or neuralgia from the septic teeth she had on admission here. Her other teeth had been removed in 1915 for sepsis and pain. Appetite and sleep are now good, but it has only been since last October that she feels on awakening she has had a good night's rest although long before this she had slept apparently well.

Menstruation—up to the onset of her illness, her periods had been regular but they then ceased and were absent from August, 1923, to May, 1924, when they reappeared and continued, as has been indicated, with fair regularity until August, 1931, since when they have ceased. She recognizes and confirms the nursing observation that all her symptoms were much worse before and during menstruation. It was noticeable to the staff that agitation was usually more pronounced during the premenstrual phase and rigidity, on some occasions amounting to catatonic rigidity, was more generally marked in the menstrual phase. During the whole illness she has experienced fear. For this fear she admits there was no external causation whatever, yet she experienced it, and it also was more pronounced in relation to menstruation. The fear has now gone and she recognizes fully that everyone has been kind to her. At the onset, she was not troubled with cacosmia, but later an unpleasant smell, which she is unable to describe, appeared, it was worse when her other symptoms were worse and especially was this so at menstruation. The cacosmia only finally disappeared after mid October, 1931. Examined with test odours she names some, separates the unpleasant from the pleasant and recognizes they are all different. She had had occasional headaches before her septic teeth were removed, but they ceased following the dental treatment and she had not been thus troubled prior to the onset of the illness. She has not been the subject of auditory or visual disturbances during any part of her illness. Objectively her appearance and conduct confirm her statements. Her facial colour, mobility and muscular tone show a great improvement on that on admission. She carries her head erect and no longer does the watery mucus accumulate at the tip of the nose. Instead of the stiffness and rigidity, there is a freedom and elasticity in her movements and the elbows are no longer carried at right angle flexion, but at normal extension. Her voice is low, but is stronger than formerly. Appetite is good, bowels act well. She has a sense of humour and displays a cheerful helpful attitude towards those around her. Her weight is now maximum since admission, 7 st. 13½ lb. B. P. 164/82 mm. Hg. Pulse 68. Right limit cardiac dullness, 2 cm. from midline. Left limit cardiac dullness, 10 cm. from midline. Cardiac sounds fair, no murmurs, no extra systoles. Urine, 1022, acid, nil abnormal.

Discharged recovered to her sister, December 10th, 1931.

February 29th, 1932 : Sister reports she is quite well and preparing to take a domestic situation.

GROUP VI.—*Cases in which the Infective process is treated by Anti-Streptococcal Serum.*

In many cases where the responsible foci have been bacteriologically investigated, streptococci have been found therein and there has been reasonable ground to conclude that their activity was related to the toxæmia responsible for the mental disorder.

In many cases, where it has been judged that a streptococcal infection is thus operative, treatment by anti-streptococcal serum has been followed.

The polyvalent serum generally has been used in the treatment of cases presenting indications of streptococcal oral sepsis, e.g., Mrs. A.G.S. (p. 30, The Sixteenth Annual Report of the Board of Control for 1929. Part II). In a few cases this serum alone may be productive of recovery. Such cases would be those where the responsible toxæmia was originating from an open focus.

In cases of closed foci the serum alone is not likely to be successful; but, as an adjuvant in the surgical treatment of the foci, this serum treatment is of value. Some cases are now referred to and others are described in this series where anti-streptococcal sera, polyvalent and anti-scarlet, have been employed.

In "Sinusitis in the Etiology of Mental Disorder," Proceedings of the Royal Society of Medicine 1928, Vol. XXI (Section of Laryngology, pp. 45-62), three cases are described who received polyvalent anti-streptococcal serum in the early part of the treatment of their mental disorder and without immediate or apparent direct effect thereon. In all these cases, however, surgical treatment of septic foci was followed by mental recovery, although in one case, Case III, E.S.R., recourse nevertheless had to be had to non-specific protein therapy to stimulate a focal reaction and so to expedite recovery.

Case 17 in the following series of cases received polyvalent anti-streptococcal serum without any apparent effect on the mental state. This treatment was followed by an intravenous course of T.A.B. vaccine.

During the following three months, there was no recovery shown, but within three weeks of surgical treatment of foci a considerable improvement in mental and physical states was recorded and, following a short course of non-specific protein therapy, he was discharged from hospital a month after the operative interference.

In the next case, No. 18, with bad maternal family history, non-specific protein therapy was given followed by dental treatment; to this succeeded surgical treatment of sinus sepsis, mild non-specific therapy and more extensive surgical treatment of nasopharyngeal sepsis by two operations. Polyvalent anti-streptococcal serum was then given. Following this thorough treatment, his general physical condition improved during the warmer weather, but he was not well mentally nor physically. A course of non-specific protein therapy was given and still during the warmer weather he was better but not well. In spite of this treatment, he began to relapse as the colder weather of autumn approached. Another course of non-specific protein therapy was given but without effecting recovery. Further surgical investigation found closed sepsis still present: this was drained. Further dental treatment was now found necessary. Active treatment closed with a course of five injections of 10 c.c. each of anti-scarlet streptococcal serum. Now, during the worst period of the year, he improved and sufficiently during the succeeding warmer months to warrant discharge. This has been succeeded by continued mental and physical health.

It appeared in this case, after the delay in finding and completing adequate drainage and so effecting a state of open sepsis, that the anti-

scarlet serum played a definite part in effecting mental and physical recovery.

In Case 19, there was a definite history of scarlet fever, followed by a neurological state at the age of seven. Later, mental disorder developed and the patient became certifiable at the age of eighteen. A course of T.A.B. vaccine caused an exacerbation of the mental symptoms, but after surgical treatment of sepsis and two further courses of T.A.B. vaccine an improvement appeared. A course of anti-scarlet streptococcal serum was given, and a further stage of improvement was shown and continued. Discharge followed.

It was considered that the serum played an important part in obtaining recovery.

CASE 17.

A.C.P., male, married, gardener, aged 27 on admission to mental hospital on June 28th, 1929. First certification.

History.—Family: Alcoholism and tuberculosis. Insanity in both parents. The mother died under certificate, aged 57, with oronasal sepsis, bronchitis and cardiovascular degeneration. Paternal aunt insane. Two sisters and one brother alive and well.

Personal.—A twin child. School 5–14, left in Standard VI. Commenced work in a leather factory, then took up and continued at gardening. Has retained last situation for five years. Happy married life. A nervous child; had, when aged 7, a “nervous breakdown” which lasted for a year. Measles at 8. Always pale faced. Latterly a very excessive smoker, up to 80 cigarettes daily. Not alcoholic.

Present Illness.—Onset of attack gradual. Lost weight and also lost hair over top of head. Depressed, irritable, anger quickly exhibited. Insisted on excessive sexual gratification. Later became impulsive and destructive. Made an attempt at stabbing his wife in a phase of anger. Admitted to observation hospital he was found to be depressed, vague and uncertain as to times and dates, obsessed with the idea that he had not long to live, admitted having stabbed his wife and said that she irritated him. He became more confused, rambled in his conversation; suspicious, he watched everybody and refused to rest in bed. Insisted that he had all sorts of diseases and was going to die at once and there was some mystery concerning his condition.

On Admission.—Physical State: 5 ft. 5 in. 8 st. 5½ lb. Temperature 97.2° F. General vitality poor. Nutrition poor. Bruises on arm and chest caused by his restlessness. Abrasions on both legs. *Skin*: Dry and cold. A diffuse papulo-pustular staphylococcal eruption on chest, back and scalp. Lymph glands palpable in both posterior triangles. *Circulation.—Heart*: Limits, normal. Sounds, clear but faint. Rhythm and rate, regular 90. Pulse, thin and regular. Blood pressure 162/128 mm. Hg. recumbent. Peripheral, sallow pallor of face. No cyanosis. No oedema. *Lungs*: Nil abnormal. *Mouth*: Throat, tongue moist. Gums soft. A catarrhal stomatitis. Mucopus in oropharynx. Palate congested. Tonsils enlarged and septic. A streptococcal type of infection. *Nervous System*: Bilateral ptosis. Sclerotics visible below corneae. Overaction of frontales. Pupils equal, react to light and accommodation. Tinnitus aurium. Unpleasant taste in mouth. *Reflexes*: Superficial, present. Plantar response flexor. Deep, present, equal. Sphincters under control. *Muscular System*: Poor development and tone. Carriage poor, drooping. Abdomen nil. *Urine*: Acid 1010, urate deposit, nil else abnormal. *Blood*: Wassermann test negative. Widal test negative to all groups.

Mental State.—Anxious facial aspect. Depressed, suspicious, fearful, agitated. Attention fair to poor. Fairly well orientated, but displayed a considerable degree of clouding of consciousness. No hallucinations elicited. Resistive to nursing attention, very suspicious of examination and treatment. Very restless, if left to himself wandered in a vacant agitated manner. Constantly rubbing and scratching his chest and scalp. Difficult with food, takes only liquids after much persuasion. States his food is poisoned. Is convinced that he is going to die at once. Insists that he has a number of diseases, but is unable to explain what he means by these statements.

Course and Treatment.—A course of anti-streptococcal serum was followed by a course of T.A.B. vaccine given intravenously. The latter caused herpes on the chin and around the lips, definite pustular areas formed and later subsided.

July 10th: Slight physical and mental improvement. Less resistiveness to nursing. Less depressed. Agitation and fear still present. Takes food well with persuasion.

July 12th: Radiography of skull. Both antra show some haziness, more on the left.

July 24th : A relapse, agitated and restless, scratches chest on which eruption persists. Taking food fairly well. Sleeping poorly. Resistive to colon irrigations.

August 7th : Although allowed to be up and dressed, symptoms persisted, took no interest in appearance, clothing untidy, agitated by day and night. Very obsessed with depressed ideas.

August 30th : No essential change in mental state. On some occasions very restless and agitated. At others only less so. Takes food under persuasion only. Resistive to colon irrigation.

September 14th : Has developed a boil over middle of left side of forehead about size of walnut, no evidence that it was caused by scratching. Incised, much pus.

September 28th : Less agitation, but further than this there is little to add. Less difficult with food and medicine. Sleeping better. More amenable to nursing. Weight at end of September, 8 st. 2 lb.

October 8th : Bacteriological examination of faeces. B. Friedlander. Non-haemolytic streptococci. Injections of colloid calcium oleate.

October 9th : Under general anaesthesia. Nasal sinus examination, Watson-Williams technique and irrigation. Sphenoids, both clear. Ethmoids, right, much mucopus. Left, mucopus. Antra, both mucopus. Thorough irrigation of antra with antiseptic solution and drainage of ethmoids. Septic tonsils removed by dissection. Following the operation he showed increasing composure and became quite amenable to treatment including ultra-violet therapy.

October 23rd : Ear, nose and throat review. Tonsil beds healing, very satisfactory.

October 27th : A considerable improvement. Tidily dressed, helping in ward, takes food and medicine well. No suspicion displayed. Co-operates in colon irrigations which bring away much mucopus.

October 29th-31st : Three intravenous injections of T.A.B. caused a less extensive herpetic reaction than on the first occasion of this treatment and were followed by increased physical and mental improvement especially shown in facial colour, mobility and tone. Rosy facial colour, erect carriage. Fear completely subsided. Attitude to wife satisfactory whilst on parole and visiting.

October 31st : Weight 9 st. 8 lb. Skin eruption completely disappeared both on trunk and scalp.

November 6th, 1929.—*Review* : Fully orientated. Able to converse intelligently and to give the facts of his illness. He fully realizes he has been mentally and physically ill and in a state in which he might have made the statements he had done before admission. He realizes he has been very irritable, and it was in a state of irritability that he attempted to stab his wife. At the time he thought she irritated him, now he realizes he was too irritable and that she was not in any way responsible. He has a real affectionate regard towards his wife. He has only a slight memory of admission, and recognizes that he was in a state of mental confusion for some time afterwards. He remembers fairly clearly that he refused to take his food, and was in a restless wandering state picking himself. He was then very depressed and full of fear, and afraid that the doctors and nurses intended to harm him. The feelings of depression and fear of those around him have passed away, and he now realizes there was no real foundation in fact for the fear, as good has been done to him, and he feels better mentally and physically. Especially has this change of feeling been present since the nose and throat operation, since when the sensations of dull heaviness at the back of the head and pains generally in the head have gone and have not returned since the operation. Has had no definite influenza attack, but has had colds in the winter, although not severe enough to keep him away from work in previous years. He recalls that he has been troubled with nasal catarrh for the last five to six years. It increased as time went on and latterly he frequently felt sick and nauseated and unable to eat his breakfast. Later, with the catarrh there came an unpleasant dry sticky feeling in the mouth and throat with a sensation of an unpleasant taste. Headache began to be noticeable about 4-5 years ago. At first fleeting, lasting only a few hours, and occurring at irregular intervals of from one to three weeks. Its severity varied, sometimes mild sometimes more severe, associated with a giddy sinking feeling. These headaches were situated at the back of the head. Sometimes with them he had buzzing and crackling noises in the ears from which he obtained some relief by the removal of wax, otherwise he has not been troubled with head noises nor "voices," at all events he has no memory of being so troubled. As the years went on the headaches became worse and on the whole, were worse in the summer. He noted this because in his work of gardener he was much out in the sun and he sweated easily on exertion. On the whole he felt generally worse in the summer than in the winter. As the headache became worse it became a pressing pain, as if it were a weight pressing inwards. It was always the same sort of pain and in the same place, at the back of the head. During the two months preceding admission it was more severe and continuous

than previously, and, shortly before admission, it had developed a burning quality and so it continued until after the nose and throat operation when it passed away. The nasal catarrh was associated with the headache and the effort of coughing to remove the irritation of the discharge brought on the headache or made it worse. He now can cough, if he wishes, without experiencing headache. Formerly, although he had had colds in the winter, he always felt better, on the whole, during that season than in the summer until the winter of 1928-1929. During the latter part of 1928 he began to feel more exhausted than usual, and a fortnight before Christmas, 1928, he ceased work, on medical advice, to have a rest. He felt general lassitude, lack of energy and general weakness. He was not then definitely depressed, but he was run down, his strength he felt was going, and he became easily exhausted, but he had no definite feverish attacks. During this winter he was troubled with an eruption round the lips. In early part of 1929 he became thinner and worried about himself. During April the skin eruption appeared, together with depression and pains in the upper abdomen. He went to a general hospital and was advised to have an operation and vaccines, but he was too fearful to accept the advice and discharged himself from the hospital. He denies having exposed himself to the risk of contracting syphilis.

After this, all the symptoms became worse, he felt unable to work, was depressed, irritable and the headache, pains in the head and upper abdomen and skin rash became worse. The pain in the upper abdomen became severe and of a griping character on both sides and he was unable to eat or keep anything down. The bowels became more constipated. A fortnight before admission all these symptoms became worse, and led up to the events already described in the history. Now he feels life is worth living, and all the unpleasant feelings and sensations have passed away. The lassitude and exhaustion have disappeared, and he feels more active and energetic. The headache has cleared, the unpleasant taste in the mouth and the abdominal pain have passed away. He has a good appetite and the bowels act well. He can also swallow better than formerly. He is not troubled with noises in the head. The nose feels clear now. The last T.A.B. course was followed by a feeling of clearing of the nose and it now feels clearer than before he broke down. He was not troubled with unpleasant smells before he broke down, and the sense of smell is quite satisfactory. Tested with the odours he recognizes they are all different, separates the pleasant from the unpleasant, and names three out of five correctly. He has not been troubled with visual disturbances. All that he remembers in this connection is that in the winter his eyes used to water more when he had a cold. Now except for the healing remains of the herpes round the lips, the skin has healed and on the scalp the hair is growing, not only in the areas where the septic eruption was present, but over the top of the head. He displays a calm and composed manner. Works intelligently in the ward displaying interest and initiative and presents a tidy appearance in dress. Weight 9 st. 8 lb. B.P. 144/92 mm. Hg. recumbent. Ear, nose and throat review. Tonsil beds healed. The left nose shows on anterior rhinoscopy a slight amount of mucopus. No further active treatment required.

November 14th, 1929 : Sent out on a month's trial.

December 1929: Reports from his doctor, the visitor and relatives very satisfactory. Discharged, recovered.

July, 1931 : Satisfactory reports.

January 13th, 1932 : Visitor reported on interview. Physical and mental condition, very satisfactory. Sleep and appetite good. Steady weight about 10 st. 4 lb., with clothes. No headache. Fully occupied with gardening work. No other illnesses.

CASE 18.

7365, J.T., married, enameller, aged 29 on admission to mental hospital on first certification on March 7th, 1929.

History.—His father was dead. The mother, a chronic alcoholic, with cardiovascular degeneration and enlarged liver, was now demented and had been resident for many years in mental hospital after several attacks of mental disorder. A maternal aunt had died in mental hospital. The patient had had an average elementary education, had served in the Great War and had two children. He was non-alcoholic.

Present Illness.—From the history available mental symptoms were only recognized a week before admission to mental hospital. He announced that "God's voice" talked to him. Admitted to an observation hospital he was very noisy, chattering and constantly praying aloud, stating that he must do this for the benefit of the other patients in the ward. He stated that the male nursing staff were priests, but nevertheless he refused to obey their injunctions to stay in bed; on one occasion he attempted to strike a male nurse with a chamber vessel. On another occasion he suddenly jumped out of bed and rushed to the bedside of another patient, who did not

need assistance, saying that he must save him. These symptoms continued. He was admitted to mental hospital.

On Admission.—*Physical State*: Height 5 ft. 6½ ins. Weight 8 st. 12 lb. Moderately nourished. Very sallow complexion. Thyroid not enlarged. Cervical lymph glands not palpable. Heart and vessels appeared normal. B.P. 134/90 mm. Hg., recumbent. No cyanosis. *Lungs*: Normal. Carious teeth and periodontitis. *Nervous System*: Vertical headache was elicited, but he denied that he perceived any other sensory disturbance. Pupils dilated, equal, reacted to light and accommodation. Superficial reflexes active. Knee and ankle jerks equal and active. No tremor. Sphincters under control. Anaesthesia not detected. Muscular system, moderate development, tone fair. Abdomen, nil. *Urine*: 1020, urate deposit, acid, no abnormal constituents. *Blood*: Wassermann reaction, negative.

Mental State.—Confused, he was triply disorientated. He was unable to concentrate in conversation on any subject, recent memory was very poor. Asked to describe any sensory disturbances, only by direct question was the presence of a vertical pressing headache elicited; other sensory disturbances were denied and even the headache was minimized. He preferred to inform one in a rambling fashion that he heard God's voice talking to him, also the voices of three other people whom he did not recognize, the content of the utterances of these invisible persons or even whether they uttered words could not be elicited. It was difficult to secure and hold his attention. Left to himself, he muttered inaudibly and displayed a worried and suspicious aspect. Fear was manifest, he was restless, resistive to examination, nursing and treatment and occasionally impulsive, but anger and aggressiveness were rarely shown. At night he was restless and resistive to nursing attention. Sleep was poor even when paraldehyde was employed.

Course and Treatment.—On March 8th an intravenous injection of T.A.B. vaccine, 300 million was given. After this he was less restless, more amenable but still confused. A Widal test on March 14th gave agglutination values in Oxford units: Typhoid 666, paratyphoid A. 222, the remainder negative.

March 15th: Dental examination found a severe state of oral sepsis. Some teeth required immediate removal. It was hoped that by this means and treatment of nasopharyngeal sepsis, that the condition of those remaining would improve. Four carious teeth were extracted. Following this treatment there was, and especially whilst the dental sockets were still unhealed, a mitigation of the mental symptoms. He regained orientation, and appeared to have obtained some measure of insight into his illness, recognising that his statements concerning his hearing of God's voice were erroneous. He asserted that the auditory hallucinations and the headache had passed away. He was even able to employ himself usefully in the hospital.

March 27th: Ear, nose and throat examination. Anterior rhinoscopy—both sides injected. Posterior rhinoscopy—swelling both sides of septum behind, especially left. Tonsils—both contain liquid pus. Ears—normal. Nasal sinuses—transillumination. Frontals—neither clear. Antra—left dimmer than right. Under local anaesthesia the left antrum was investigated by the Watson-Williams' technique. Mucopus was found. The cavity was irrigated with antiseptic solution, hydrag. biniodid 1/10,000. It was at this time that the improvement shown following dental treatment came gradually to an end. Physically he had improved, his weight at the end of the month was 9 st. 9 lb., but mentally he gradually became worse, the principal symptoms being lack of emotional control.

On March 31st he was depressed and emotional, stated he had done some "great wrong" to his wife and friends; sleep was poor. On the following day he was bright and cheerful, but depressed again at night and obsessed with the idea that he was responsible for "all the trouble." On April 2nd, having been restless and depressed during the night, insistent with the idea that he had been "a lot of trouble to everyone," during the day he stated he felt more composed, but later showed marked depression and agitation. He denied the presence of "voices." During the early part of April, the severity of the emotional symptoms although still variable, became worse, confusion returned and increased in intensity; he was restless, agitated and chattering but rarely abusive. Sleep was variable, on some occasions he slept well, on other occasions less well.

On the night of April 7th he complained of pains in the head, stated that his head felt tight, there was a buzzing sound in both ears and that at times when people were talking to him their voices seemed a long way off, so much so that he could hardly hear them. By April 9th these symptoms had again diminished in severity and by the 11th confusion was less. Two continuous colon irrigations given on the 5th and 12th both brought away a large amount of mucopus from the bowel.

On April 16th and 17th two subcutaneous injections, each of 10 cc. colloidal calcium oleate were given.

On April 17th : General anaesthesia. Removal of septic tonsils by dissection. Removal of adenoids. Bilateral antral investigation by Watson-Williams' technique found mucopus in quantity in right antrum. Both antra were drained intranasally. Temperature after operation rose to 98·8°F., and by the 20th had subsided to normal. Following the operation, and whilst the tonsil beds were still unhealed, the mental symptoms were much less in evidence. Conduct continued to be satisfactory until about midnight of April 28th, when he displayed a minor impulsive act and refused to stay in his own bed. Apart from this incident April ended without the appearance of active conduct symptoms. A colon irrigation on April 30th brought away large flakes of mucopus scattered throughout the wash. Throughout the whole of the following May active conduct symptoms were associated with his confused and depressed state. Sleep was bad, and rarely wholly, or even partly, was the insomnia relieved by sleeping draughts. He was restless, resistive and on several occasions made impulsive and violent attacks on the nursing staff, other patients or ward equipment ; on other occasions made many attempts at self-injury by throwing himself from the bed on to the floor. During this time his rambling statements included the following : There was a magnetic force under the bed ; God had disowned him, but whispered to him to do good and to cure people of their diseases ; something was happening to his mother ; he was going to smash windows to enable other patients to breathe ; he wanted to work. Two dental reviews were made during this month and four teeth were removed, having by now become loose. His weight at the end of May was 10 st. A subcutaneous injection of 10 cc. colloidal calcium oleate was given on June 4th and June 5th. In view of the persistence of symptoms after antral drainage, it was considered that sphenoidal exploration was necessary.

On June 5th : Under general anaesthesia, a nasal sinus examination using the Watson-Williams' technique found : Sphenoids. Left—very thick membrane, flakes of mucopus, very haemorrhagic. Intranasal drainage made. Right—membrane appears normal, no contents. Ethmoids. Right—nil, not sclerotic. Left—sclerotic, not entered. Antra—the intranasal drainage openings already provided were found to be patent. A rise of temperature to 99°F. on the evening of the 5th was the only pyrexial response to the operative interference.

From June 7th to 11th a course of five subcutaneous injections, each daily, 20 cc., of polyvalent antistreptococcal serum (B.W. & Co.) was given and accompanied by forty grains of calcium lactate thrice daily by mouth. No reaction was associated with this serum treatment until June 16th, when an urticarial rash of a morbilliform character appeared, chiefly disposed on the abdomen and thighs with isolated patches over body and limbs. This cutaneous reaction had disappeared by the 17th, but after only two minutes exposure to ultra-violet radiation on that date it made a transient reappearance. A colon irrigation on the 18th removed a fair amount of mucopus, but another given on the 27th resulted in fairly clear returns. At a dental review on the 28th three further extractions were required. During June, acute conduct disturbances were very much less in evidence than they had been in May ; in fact they appeared on only three occasions and these were quite unrelated to each other and occurred at night. His general physical condition continued to improve, and at the end of the month his weight was 10 st. 4 lb. A Widal test on July 8th, gave Typhoid 42. Para A. 22, Oxford units, the rest negative.

After these investigations it appeared reasonable to conclude that all the foci of sepsis were either removed or in a state of "open" drainage. A course of eight intravenous injections of T.A.B. vaccine was given from July 9th to 19th, doses from .1 cc. to 3·0 cc., each injection produced a rigor and the maximum pyrexias evoked varied from 104·6°, 104° and 103·2° F. Maximum pulse disturbances were 120. Frequency of stools followed the first injection. Herpes appeared on both lips. Headache was again complained of varying in intensity from a feeling as of burning at the top of the head, then a feeling of pressure and tenderness and on another occasion the head "felt like lead."

These conditions passed away after the completion of the course. His mental state during the remainder of July and well into August was tolerably uniform, there was an absence of acute symptoms, he was composed and amenable, but whilst there was less fear and mental confusion he lacked self-confidence, resolution and capacity to concentrate. A Widal test on August 1st found : Typhoid 143 : Para. A. 222 and Para B. 400 Oxford units.

On August 7th an Ear, nose and throat review found : Anterior nasal spaces showed surface injection. The posterior end of the right inferior turbinate was very much enlarged.

On August 9th a dental review found another tooth had become diseased and was extracted. The returns from the colon irrigations had, during July and August, been almost free from mucopus, but as autumn progressed the amount of mucopus increased from a small amount to a fair quantity, and then to a large amount of

mucopus during September. As September wore on he gradually became more, but variably, confused, and depression gradually intensified. He stated he believed that he was responsible for all the other patients being in the mental hospital. He felt he was losing confidence in himself and especially in the morning did he feel this to be the case. Conduct was not appreciably abnormal.

September 26th : Widal test. Typhoid 143. Para A. 111. Para B. 40. Oxford units. His weight at the end of September was 10 st. 7 lb. Although his general physical state had improved following each stage of detoxication treatment and with it there had been an amelioration of the acute mental symptoms, now, with the return of colder weather, the physical symptoms of exacerbation of the infective process in the head reappeared associated with the return of the emotional and intellectual disturbances.

On September 30th he was very depressed, agitated and definitely confused and it was elicited that he experienced sharp pains in the head in the parietal region. On the following day definite vertical pressure headache was present.

On October 3rd he was more composed, and by October 6th he was less confused, the pains in the head had gone, but muscae volitantes were experienced. Both pupils were dilated, the right more than the left. This exacerbation subsided leaving depression with variable agitation as the principal and continuing manifestation during October. The colon irrigation returns continued to be fairly clear. The view was now taken that some infection still persisted, but that the drainage of the lesion was open and that another course of non-specific protein therapy might be helpful in provoking a focal reaction therein.

From October 29th to November 5th : Eight injections of T.A.B. vaccine were given intravenously, doses from 0.1 cc. to 3.0 cc. evoked rigors, pyrexias, maxima from 102.4° to 103.6, pulse maximum 136, and herpes on the right nasolabial fold and lower lip. On recovering from the immediate effects of this course of non-specific protein therapy he was still depressed and complained of vertical headache. What may have been a more remote focal effect of the therapy or of seasonal causation appeared on November 10th, when he complained of vague abdominal pain and vertical headache. Depression was more pronounced. What can be correlated with the abdominal discomfort, which soon passed off, was the appearance of a large amount of mucopus in the returns of a colon irrigation given on November 14th. At two dental reviews during November the state of the mouth did not call for active treatment on clinical grounds or on recent radiographic evidence. At a colon irrigation on November 29th the returns contained only a small quantity of mucopus. During the latter part of November and the greater part of December his mental state displayed no acute symptoms. The fear and anger manifestations were less active, depression was still in evidence and a low grade confusion persisted. These symptoms varied in intensity from time to time, sometimes from day to day. He did not readily enter into conversation, on some occasions monosyllabic replies were all that were obtained to questions, the capacity for voluntary conversation was in abeyance, whilst on other occasions when questioned he gave no reply although presenting withal a sort of pathetic "dumb dog" appearance. On various dates he complained of pain in the left side of the chest, in the abdomen, lumbar region, on the top of the head, over the occiput, etc. These pains were transient and did not prevent his carrying out light ward work during this period. At the end of December, 1929, another exacerbation of symptoms occurred, of these depression was predominant, but there was definite though variable confusion, and he experienced again a burning sensation on the top of the head, this later merged into a feeling of pressure and this again intensified into a feeling of heat. These symptoms continued and varied in intensity, and were not relieved by nasal inhalations nor by a colon irrigation given on January 2nd, the returns now contained much less mucopus.

Having regard to the continuance and variation in severity of the vertical headache and the fact that sinusitis had been found in the left sphenoid it was considered that another investigation should be directed to the sphenoids. Injections of colloidal calcium oleate were given.

On January 7th. 1930, under local anaesthesia. Sphenoidal investigation : Watson-Williams' technique. The left sphenoid opening was found to be patent. In the right sinus mucopus was now found and that sinus was also drained intranasally. Some haemorrhage occurred about two hours after the operation controlled by local and general haemostasis without serious disturbances ensuing.

On January 9th : Temperature rose to 100° but next day fell to normal. On recovery from the operation ultra-violet radiation therapy, which had been practised since the last course of T.A.B. treatment, was resumed.

On January 31st : At a dental review all the remaining nine teeth were now found to have become definitely diseased. The returns from colon irrigations given during later January and early February were found to contain increasing amounts of mucopus.

Again he had another exacerbation of the infective state in the head on February 4th. Temperature rose to 99.2° , he perspired profusely and complained of a bifrontal and right temporal headache. On the following day temperature was normal. Recovery from this transient influenzal type of condition was again followed by exacerbation of depression and confusion. Again there was a tendency for the reappearance of the conduct symptoms shown on admission. His general physical state was well sustained. His weight was 10 st. 6 lb. at the end of January. On February 14th, under general anaesthesia, the remaining teeth were extracted.

From February 25th to March 3rd: Five injections of 10 cc. each of anti-scarlet streptococcal serum were given. There was no pyrexial reaction save on one occasion when temperature rose to 100.2° F. A cutaneous reaction which appears to have been related to the antiserum treatment was the appearance of a whitlow of the left thumb, which developed without any preceding trauma. It was healed by March 6th.

On March 9th and 10th: He again exhibited an exacerbation of symptoms complaining of vertical headache, although more referred to the left side, and a feeling of epigastric discomfort which he described as "coldness." Associated was depression and restlessness, but fear and agitation were less in evidence. His facial tone had latterly much improved, and he was sleeping much better than he had done when these exacerbations had occurred previously. The severity of these symptoms again abated and the course of ultra-violet radiation was continued during March and April. During this time he showed general physical and mental improvement. He was more cheerful, composed and self-confident, the confusion cleared and headaches ceased. He was able to take an interest in his surroundings, to take up work, indoor and outdoor, and to go on leave from the hospital. This improvement continued during May.

May 31st, 1930: *Review*: Normally orientated, appears more cheerful than at any previous time, he is able to converse and to describe the characteristics of his illness. He recognizes he has been ill mentally with "a complete mental breakdown" and considers he is now recovering his normal state. After a severe attack of influenza in 1919 he had attacks of tiredness which increased to attacks of general lassitude in which there was general muscular weakness. The heart was at this time dilated, but after a period in a convalescent hospital he improved. Early in 1927 he had another severe attack of influenza. Before the onset of the present attack of mental illness he had an attack of influenza and was in bed with a temperature for a fortnight. A feeling of general weakness developed six months before admission, this grew worse, and with it there was an increasing loss of capacity to concentrate on his work. A terrible feeling of fear came on suddenly four days before he went to the observation hospital and associated with this was severe depression, everything seemed to have gone wrong. He knew he was getting worse and he recognized he would have to go into hospital. He recognizes that he was confused on admission and states that his memory of admission and what happened afterwards is very poor and patchy. He does not remember talking about electric waves, but he does remember having a sensation as if something was parting his head on either side over the temporal regions, as if the inside of the head was opening and shutting. Later, the pressure pain and burning sensation on the top of the head developed. After the operative treatment the headaches gradually diminished, and at the present time he is free from them. He does not appear to have been troubled at any time with disturbances of smell or taste. He has no memory of the auditory hallucination he experienced during the acute stages of the illness nor that any tinnitus was related to its appearance. For many years he has had difficulty in breathing through the right nose and after the attack of influenza, subsequent to demobilization it became gradually worse so that during the four years preceding admission he was quite unable to breathe through that side. Now the airway on both sides is subjectively and objectively satisfactory. His conversation is now easy and lucid and memory for events—other than those of the early part of his illness—is satisfactory. He is able to remember those times when he was afflicted with attacks of fear. They had very approximately a monthly periodicity. During their incidence he was unable to reply to questions or take part in any conversational effort—he then was quite unable to bring up any ideas or utter any words and he was only capable of gazing at the questioner in a pathetic, dumb manner. Since the last operation on the nose (in which drainage of the right sphenoid was effected) he has had no attacks of fear and confusion. Physically there is a general improvement in muscular and vascular tone. Facial tone, mobility and colour have much improved.

Review of the ear, nose and throat. General injection of nasal mucosa. No pus seen. Weight 10 st. 5 lb.

June 12th, 1930: Discharged on trial.

July 10th, 1930: Reports from his doctor, relatives and the visitor were satisfactory. He was discharged recovered.

January 9th, 1932: Since discharge he has continued to visit his mother. To-day he made such a visit and appeared to be in normal physical and mental health.

CASE 19.

G.E.E., male, single, storeman, aged 18 on admission to mental hospital on August 9th, 1929. First certification.

Psychotic heredity denied. Patient was regarded as normal up till seven years of age, when he had an illness diagnosed by three doctors as scarlet fever, followed by "meningitis," since then there was periodical bed wetting until the spring of 1929. This illness kept him from school for a year. Two years before admission a heavy case fell on his head without apparent untoward results. Nine months before admission he was knocked off his cycle, and, although he did not complain of any head injury, an existing depression, which had gradually been developing, afterwards became more pronounced and for six months before admission he was under medical treatment for neurasthenia. The symptoms included with the depression, an irritability, all noises even the ticking of clocks worried him, marked insomnia, poor appetite and lapses of memory. Later appeared mental confusion and finally disturbances of conduct. He stated he went up into the skies, that he was Jesus Christ, that he had to be awake all night because girls were walking round him, that he could hear clocks ticking (when there were none about), he wanted to drown himself. Later he became uncontrollable.

On Admission.—Height 5 ft. 8½ in. Weight 9 st. 4 lb. Fairly well nourished. Skin dry with some papulo pustular eruption on face and chest. Heart and lungs and abdomen appeared normal. Blood pressure 128/92 mm., Hg. Peripheral circulation poor, sallow facial aspect. No oedema. Some tremor of tongue, bilateral ptosis. Immobile facial aspect, strongly suggestive of post-encephalitis. *Urine*: 1016. Acid, nil abnormal. Wassermann and Widal tests negative. Large septic tonsils and post nasal sepsis. Mentally he was diagnosed as a case of dementia praecox. Although he gave satisfactory answers to questions concerning orientation, there was much confusion of thought. He was simple and childish, auditory and visual hallucinations were present. He repeated the statements that he was Jesus Christ, that girls walked round him at night, that he saw the Devil looking at him, and insisted that he heard his father and mother calling to him. Restless and wandering, he giggled, grimaced, attitudinised and was resistive to nursing attentions.

Course and Treatment.—On clinical and radiographic examination the teeth were found to be healthy. Wisdoms erupting normally. From August 15th to 21st he received seven intravenous injections of T.A.B. vaccine, viz.: .1 cc. caused a maximum temperature of 101·8°, .2 cc. evoked 105°, .3 cc. 102·2°, .4 cc. 103°, .5 cc. 102·4°, 1·6 cc. 102°, 2·4 cc. 102·2°. Rigors preceded each pyrexia. The maximum pulse elevation was 122. No mental improvement was appreciable after this course. In fact, he appeared on the whole somewhat worse, he was very restless, noisy, chattering, giggling, abusive to those nursing him, destructive to clothes, sleeping poorly but was taking food fairly well. At times it would appear that he had some dim appreciation of his state, for on one occasion he volunteered that he was "talking a lot of nonsense."

On August 29th, he co-operated sufficiently in an ear, nose and throat examination to permit of the following observations being made: Ears, normal apart from a right otitis externa, no active perforation. On anterior rhinoscopy the nose was clear. Posterior rhinoscopy was not practicable. On transillumination the antra and frontal sinuses were all dull. The tonsils were large and septic and contained pus. Nothing abnormal was found on bacteriological examination of the stools. The mental symptoms became more marked, and sedative drugs were discussed. He was given collosol bromine thrice daily. Its beneficial action was however transient, but, under its cover it became possible to give him colon irrigations which he had formerly resisted. These brought away mucopus. Radiographic examination of the sinuses found an absence of the frontal sinuses, but there was a partial obscurity of the left antrum.

On September 17th, 18th and 19th he received daily 10 cc. of colloidal calcium oleate intramuscularly, and on September 19th, under general anaesthesia, a nasal sinus exploration, Watson-Williams' technique, found no exudate in any of the sinuses. The septic tonsils were removed by dissection. Convalescence from the operation was uneventful, and it was found that the bromine preparation was now not required, so on September 24th its use was discontinued. He was now given elixir pituitary, prepared from the whole gland, and this was continued during the rest of his mental hospital residence. Colon irrigations were continued, on each occasion bringing away mucopus. A review of the nose and throat on October 23rd found the nasal passages clean anteriorly but posterior examination—in which he now co-operated—found mucopus. A further course of T.A.B. was considered advisable and was given from October 24th to 31st, eight injections intravenously doses from .1 cc. to 3 cc. These evoked rigors and maximum pyrexias from 101·4° to 104°F.

On November 13th a rhinological review found crusting of the anterior nasal spaces and enlargement of both lateral pharyngeal bands. It was decided that if there was no improvement in a month another antral exploration should be carried out. In

the meantime, his mental state had become stabilized and the diagnosis of dementia praecox as a permanent condition was certainly not inapplicable. He was less, although occasionally, noisy and excitable but was futile, childish and irresponsible. The facial aspect still showed limitation of mobility. Weight at the end of November was 10 st. 2 lbs.

On December 18th, under general anaesthesia, antral exploration was carried out and evidence of infection was found, both antra were drained intranasally. Nasal inhalations and antral irrigations were given. When the raw surfaces had healed, a third course of T.A.B. was given from December 30th to January 5th, 1930, six injections, doses .1 cc. to 1.6 cc. evoked rigors and maximum pyrexias from 102° to 104° F. The colon irrigations now gave clear returns and this treatment ceased. A definite improvement now slowly appeared, both physically and mentally. He was able to express himself better on paper than in conversation and on January 12th he was sufficiently well to write an appreciation of his treatment and a description of the onset of his condition. The first symptoms he remembered were sleeplessness and irritability, commencing around Christmas, 1928, he confirmed the fact that clock ticking and finally all noise induced a state of exquisite irritability and depression. He stated that since the antral drainage operation, enabling the irrigations to be carried out, he felt much clearer in the head. He was now able to sleep, had a good appetite and was not irritated by clocks and noises. There was now no evidence of hallucinations. A week later he developed two boils on his buttocks one of which only slowly developed, but after four intramuscular injections of colloidal calcium oleate both soon healed. He was now able to do a little light work out of doors, and at the same time during February and March he had a course of ultra-violet therapy. His weight during February fell to 9 st. 7 lb., but at the end of March it rose to 9 st. 10 lb. It was considered that although he was very much better than on admission, there were still some remains of the illness manifesting itself principally on the neurological side. The facial aspect was still heavy and immobile, the bilateral ptosis was still present, speech was slow, carriage and poise indicated a lack of tone. He was rather childish in his worries over trifles. Some depression remained. The view was taken that a suspension of function was still manifest and that treatment with anti-scarlet serum might be useful in case some toxæmic elements remained from the scarlet fever and intracranial complications he had had at the age of seven. Accordingly from April 6th to 12th he received 60 cc. of anti-scarlet (Globulin) serum by six intramuscular injections. These evoked neither pyrexia nor other disturbance. He soon was able to take up outdoor work and his weight at the end of April was 10 st. 1 lb. He now went out on parole with his parents. During May and June his physical and mental condition showed further improvement. The facial colour and tone were improved. There was less facial immobility and an increased capacity for display of emotional reactions. The ptosis was less marked. The general muscular tone was also improved. Blood pressure was 126/82 mm. Hg. His weight now appeared stabilized at 10 st.

Discharge.—He was discharged to the care of his people on July 10th, 1930. Although there was no evidence to show that the pituitary extract had played any part in the improvement it was recommended that it be continued after discharge.

July 20th, 1931: His doctor reported that the pituitary extract treatment had been continued and the patient further improved. He added, "The father developed influenza in February and the boy stepped into the breach and carried on his father's work. Since then he has worked wonderfully well and seems now to be quite normal again."

GROUP VII.—*In which the non-specific therapy was not employed, but surgical treatment of foci was carried out.*

Mention has already been made of the possibility that the non-specific treatment may be superfluous in some cases. To show that recovery may ensue after only surgical treatment of foci, Case 20 is described. It will be noted, however, that this recovery was very slow, a whole year elapsed after removal of the gross orotonsillar sepsis.

CASE 20.

W.W., male, married, clerk, aged 48 on admission to mental hospital on May 9th, 1929. First certification.

Psychotic heredity was denied. The patient had during the three months preceding admission shown increasing depression, then following came depressed and fearful ideas, these persisted and became persecutory in character. On account of his general condition he had to give up his post, but rest from work failed to improve his health and a month later symptoms became so severe that resort had to be had to certification.

On examination it was found that he was profoundly depressed, spoke not a word spontaneously and only a word or two in answer to questions; it was elicited that he imagined that people were watching him from outside the house, sometimes the "people" were magnified into crowds. At times he had been uncontrollable.

On Admission.—Height 5 ft. 3½ in. Weight 7 st. 11 lb. General physical condition was poor, he appeared ill from a septic state. The facial aspect was sallow, there was considerable lower facial tremor. The arteries appeared to be sclerosed. The major viscera appeared free from lesions. Urine was free from abnormal constituents, apart from an excess of urates. Wassermann and Widal tests in the blood were negative. Gross oropharyngeal sepsis was present. Mentally, he was severely depressed, confused, incapable of conversing; from his disjointed and slow utterances it appeared that his thoughts were chiefly concentrated on the idea that people were waiting for him outside the hospital with harmful intent, another persistent notion was that "people stole his thoughts." Fear processes were strongly in evidence. At times he refused food.

Course and Treatment.—Co-operation in treatment was poor, but he accepted colon irrigations and cod liver oil and malt. Dental examination, clinically and radiographically showed a serious dental state. Bacteriological examination of the faeces showed the presence of *B. Friedlander*. This was not surprising when regard was had to the conditions in the mouth, nose and throat. An ear, nose and throat examination found: Ears normal. Hypertrophic rhinitis—both tonsils grossly diseased with much pus. Severe granular pharyngitis. On transillumination, the right antrum was dull. He was put on calcium lactate, twenty grains thrice daily and dental treatment was commenced in stages.

On July 27th, under general anaesthesia, the diseased tonsils were removed by dissection. They were extremely septic and severe haemorrhage occurred during and after the operation; it was, however, controlled by local and general haemostatic treatment and gradually his general condition improved under haematinics and tonics. The tonsil beds healed satisfactorily. Dental treatment was continued in stages during September, October and November. His mental improvement was slow. Physically he was improving. His weight had risen from 7 st. 11 lb. on admission to 8 st. 12 lb. at the end of August, and at the end of October was 9 st. 2½ lb. Towards the latter part of November a review of his mental state found that he was still depressed, but unable to give a reason for the depression; his orientation was imperfect, he was unable to concentrate on or settle to simple work, but he denied the presence of "voices." Colon irrigations were still necessary and he was also having a course of ultra-violet light. A review at the beginning of January, 1930, showed orientation was good, conversational capacity was returning. Depression was much less, but still present; he was able to smile when invited to do so, facial colour was better and there was less tremor round the lips. Life, he agreed, was now worth living. There was, however, a considerable consolidation yet to be effected. Dental treatment was continued during January by the removal of another tooth which was now regarded as definitely diseased. At the end of January his weight was 9 st. 7 lb. and his mental state was improving. By the end of February his conversational capacity was much enhanced, he was able to concentrate on simple work, the fear processes appeared to be under control, the delusions of thought stealing and being watched had ceased. Memory had improved. He went out on leave with relatives.

On March 3th he was discharged on trial to relatives' care, but returned four days later in a very depressed state with some mental confusion. Following colon irrigations, however, the acute symptoms passed away. During March and April two further dental extractions became necessary. Improvement was now progressive, both physically and mentally.

Discharge: On July 10th, 1930, he was again discharged on trial to the care of relatives. On this occasion relapse did not occur and at the end of the month his doctor's, relatives and the visitor's reports were satisfactory. He was discharged recovered. He returned to his work in August, 1930.

July 20th, 1931: Relatives report he is keeping very well, is following his occupation as usual, and seems very interested in life again.

GROUP VIII.—*Non-specific therapy in the treatment of the Chronic (Septic) Infective process in Syphilitic cases.*

The last case, Case 21, is one in which there was evidence of involvement of the central nervous system. The septic and syphilitic moieties of the diseased state were interlocked and treatment of one aspect alone was ineffectual. The case showed an interesting seasonal exacerbation of symptoms undoubtedly related to the nasopharyngeal sepsis.

CASE 21.

Professional man, aged 43 on admission to mental hospital on May 22nd, 1928. Second certification.

Psychotic heredity denied. Syphilis in 1916, treated by injections. In February, 1927, developed a severe "cold in the head," followed by headache and depression, then by excitement and complete loss of self-control especially manifested in alcoholic and sexual indulgence. He had treatment elsewhere, under certificate, from March 21st to August 13th, 1927, and then resumed charge of his practice. As the season of the following year approached, which had marked the onset of his previous attack, the same symptoms recurred, but certification was delayed until May 22nd, 1928.

On admission to mental hospital he was exalted, confused, restless, extremely irritable, continually chattering, frequently quite incoherently and perceived disturbances of hearing and taste in hallucination. Grandiose delusions were expressed. There was considerable facial and lingual tremor; the pupils were unequal, the right larger than the left, but both reacted briskly, directly and consensually, to light and accommodation. Overaction right frontalis, left ptosis. Voice hoarse. Slurring speech. Severe oronasopharyngeal sepsis. Several teeth root filled and in upper jaw gold bridge work covered and connected dental roots and carious teeth. The tonsils were large and septic. On transillumination the right antrum was dim. On posterior rhinoscopy the septal mucosa was bilaterally thickened. In the left ear there was a dry perforation of the tympanic membrane. Blood pressure 126/80 mm. Hg.

May 26th, 1928: Blood—Wassermann, slightly positive, 3 units. Widal, negative to all groups.

June 14th, 1928: Blood—Wassermann, positive, 4 units. Widal, negative to all groups. C.S.F.—Wassermann, positive, 6 units. Colloidal gold curve, parctic. Cells, 88 per cmm. A neurologist considered his condition to be that of Korsakoff's psychosis of syphilitic causation. Following radiographic examination of the jaws and skull, dental treatment was undertaken during June and July, together with continuous colon irrigations and ultra-violet light therapy. Relatives and their advisers were not prepared to agree to malarial therapy especially as by August his mental and physical states had shown some improvement. They moved for and effected his discharge, against medical advice, on August 4th, 1928. He had gained a stone in weight. The pupils were still unequal but reacted to light. The improvement in the mental state was after his return home found to be very illusory. After a fortnight there was a gross exacerbation of symptoms. He reverted to excessive alcoholism, became incoherent, threatened suicide, ordered goods wholesale and became quite uncontrollable. He returned to mental hospital on August 25th, 1928, in very much the same state as on previous admission. Auditory and gustatory hallucinations were present. The right pupil was still larger than the left, both reacted to light and accommodation and even when contracted under the light stimulus the right pupil was still the larger. Slurring speech. Plantar responses flexor. Right knee jerk more active than left. Blood pressure 165/118 mm. Hg.

August 30th, 1928: Blood—Wassermann, negative. Widal, negative to all groups. C.S.F.—Wassermann, positive, 3 units. Colloidal gold curve, parctic. Cells, 138 per cmm. Dental treatment was continued.

September 9th: Under general anaesthesia. Removal of septic tonsils by dissection. Nasal sinus investigation, Watson-Williams' technique: Sphenoids—left clear; right—thick pus. Ethmoids—both mucopus, more left. Antra—left, thick mucus; right—no exudate. Intranasal drainage of both sphenoids, both ethmoids and left antrum. Bacteriological examination found streptococcus subacidus and staphylococci in the exudates. Histological examination of the tonsils showed an enormous amount of fibrous tissue and very irregular distribution of cells representing a chronic sepsis. Degenerated down growths of squamous epithelial plugs. Large Gram positive diplococci seen in pure culture in tonsillar tissue (crypt). The chronic sinusitis and dental disease explained the severe cold in the head which preceded this illness.

October 3rd: Ear, nose and throat review, satisfactory.

From October 29th to November 19th a course of non-specific protein therapy using T.A.B. vaccine. Three intramuscular injections of 500, 750 and 1,250 millions followed by three intravenous injections of 250, 350 and 500 millions; the latter caused pyrexias, 103.2°, 103.4° and 101.8° F. Colon irrigations and further dental treatment continued during December and January, 1929. The nose and throat state was observed at two reviews on January 23rd and February 6th.

On February 15th, under local anaesthesia, the sphenoidal sinuses were irrigated with saline and 10 per cent. argyrol; the left antral opening was enlarged. Dental treatment was now completed. During the winter he had shown a depressed state, but as the spring proceeded he became more restless and excitable.

May 2nd, 1929 : Blood—Wassermann, positive, 40 units. Widal, negative to all groups. C.S.F.—Wassermann, positive, 20 units. Colloidal gold curve, paretic. Cells, 62 per cmm. The seasonal reappearance of acute symptoms shown during the past two years was now in full activity. He was exceedingly restless, pugnacious, continually destructive and hallucinated.

May 14th : Inoculated with malarial blood. The infection did not activate well. Only two pyrexias, to 102.6° maximum, occurred.

June 11th : Again inoculated with malarial blood. The infection activated fairly. Eight poor pyrexias ensued, from 99.6° to 102.4° F.

From July 8th to August 12th he received a course of tryparsamide, six injections of from half to one and a half grams and from July 9th to November 12th, 1929, received potassium iodide and mercury by mouth.

August 27th, 1929 : Blood—Wassermann, positive, 20 units. A second course of tryparsamide, five injections, each two grams, was given from September 19th to October 24th. Since the malarial therapy the hyperacute symptoms had subsided leaving a state of low grade excitement, exaltation associated with the expression of grandiose delusions. A review of the nose and throat condition, on October 23rd, found persisting nasal sepsis on the left side with closing of the left antral drainage opening. On November 13th, under local anaesthesia, this opening was enlarged. The conditions were found to be satisfactory at another review on November 27th.

From November 21st to January 2nd, 1930 : Another course of tryparsamide, six injections, each 2 grams was given. During 1929 his weight had increased, and at the end of the year was 12 st. 12 lb.

January 16th, 1930 : Blood—Wassermann, negative.

February 6th, 1930 : Blood—Widal, negative except for 17 Oxford units to *B. dysenteriae* Y. C.S.F.—Wassermann, positive, 12 units. Colloidal gold curve, weak paretic. Cell count, 23 cells per cmm. During the winter the excitement had passed away. He remained in a simple state, rarely offering conversation and when addressed making no effort to take part in conversation and replying to questions generally monosyllabically. Delusions no longer expressed and apparently hallucinations no longer experienced. Well behaved, he worked well in the ward. Conduct entirely satisfactory. With the return of spring there was again shown an increased irritability and exaltation, and his weight dropped to 12 st. 4 lb. in April. The signs of another relapse, although not proceeding with the same rapidity as in former years, were nevertheless very much in evidence. In the hope of preventing a further exacerbation of symptoms a course of sulphur therapy was given using Colsul, sulphur in olive oil. From May 11th to May 20th this treatment was given by five intramuscular injections. The first caused a pyrexia of 101.6° F., the remainder 103.6°, 103.2°, 103.2° and 103° F., and slight rigors. Herpetic vesicles appeared on the fingers of both hands.

June 12th, 1930 : Blood—Wassermann, negative. Widal, negative to all except 17 Oxford units to *B. dysenteriae* Y. C.S.F.—Wassermann, positive, 5 units. Colloidal gold curve, luetic. Cells, 8 per cmm. From June 19th to July 24th he received another course of tryparsamide, six injections, each of one gram.

July 31st, 1930 : Blood—Wassermann, negative. Widal, negative to all except 21 units to *B. dysenteriae* Y. C.S.F.—Wassermann, negative. Colloidal gold curve, paretic. Cell count, 204 per cmm. Since May, he had been sufficiently well to be allowed short leave from the hospital, and he was now allowed week-end leave. Conduct generally was satisfactory, but the content of his conversation left much to be desired. Weight was now stabilized around 12 st. 2 lb.

At a review in September he professed to realize that his illness was mental as well as physical, that his conduct had been abnormal, that the treatment he had received had been to his advantage and that it was necessary to continue that treatment. He was now able to assist with information as to his illness which had otherwise not been available or required confirmation. He professed to appreciate the fact of the seasonal variation of his symptoms with their acute exacerbation in the spring and that it was necessary to guard against the possibility of another relapse at that season next year by continuing treatment and control. He consented to receive further treatment. At a dental review the mouth was found to be healthy. On the two former occasions when malaria had been induced the pyrexias had been poor as compared with the pyrexial response evoked by sulphur, it was therefore decided to renew the malarial infection and on this occasion to use mosquitoes.

September 16th : Malarial mosquitoes applied to buttocks. Temperature remained normal until 28th, when it rose to 99.4°, on the 30th to 99.2°, on October 1st to 101.6°, on October 3rd to 101.4° and thereafter remained below normal in spite of measures to stimulate the activation of the infection. Malarial parasites were demonstrated to be present in the blood on October 2nd.

November 20th, 1930 : Blood—Wassermann, negative. Widal, negative except for 15 Oxford units to *B. dysenteriae* Y. C.S.F.—Wassermann, very slightly positive, 1 unit. Colloidal gold curve, negative. Cells, 55 per cmm. The malarial therapy having failed to evoke pyrexias recourse was again had to sulphur. On this occasion the vehicle for the colloidal sulphur was cod-liver oil. The course comprised four intramuscular injections given from November 25th to December 8th. Pyrexias 100.2° , 102.4° , 103.2° , 101.4° and 103.2° F. were obtained. Herpetic vesicles appeared on fingers of both hands.

December 24th, 1930 : Ear, nose and throat review. Nil abnormal.

January 3rd, 1931 : Review by ophthalmologist. Right pupil, if anything, larger than left, but probably equal in size. $7\frac{1}{2}$ mm. diameter. Round and regular. Both react to light and accommodation. Left eye, $\frac{1}{2}$ D myopic astigmatism. Right disc, slight thickening of arterial wall, slight pallor of temporal margin of disc. Left disc, a similar but less marked state. Media clear. Vision right 6/6, left 6/9. From January 26th to February 4th, 1931, another course of sulphur in olive oil, 5 intramuscular injections, was given. Temperature obtained were 100.6° , 102.6° , 103.8° , 101.8° and 103° F.

February 19th, 1931 : Urine, 1006, acid, nil abnormal. Blood—Wassermann, negative. Widal, negative to all groups except 8 Oxford units to *B. dysenteriae* Y. C.S.F.—Wassermann, slightly positive, 3 units. Colloidal gold curve, luetic. Cells, 5 per cmm. Since the review of his mental state in September last, he had shown increasing appreciation of the nature of his illness and co-operated willingly in treatment. He now worked at fairly heavy garden work and went on week-end leave exhibiting conduct which became progressively more acceptable to his family. His weight had now fallen to 11 st. 4 lb. B. P. 142/98 mm. Hg.

April 4th, 1931 : Left the hospital on trial.

June 27th, 1931 : Visited the hospital. There had been no evidence of a seasonal relapse of symptoms. His family and advisers were satisfied with his condition and he had taken up his practice again. Pupils circular, right slightly larger than left, both react proportionately to light and accommodation directly and consensually. Eyebrows and eyelids are equal. No tremor of hands, face or tongue. Intention tremor and Rhombergism absent. Knee jerks both present, right more active than left. Slurring not appreciable. No colds, no nasal discharge. Conduct and bearing satisfactory, calm and composed and with a normal dignity of carriage. Conversation normal. His son states that before the first attack he had been for some time increasingly irritable, and bad tempered, but that now he is much more calm, composed and reasonable.

Discharged from the books as recovered.

Up to the time of reporting, February 28th, 1932, there has been no relapse.

Other non-specific mechanisms which alter the mental state by their action on the Causal Lesions of Toxaemia.

In the preceding section an endeavour has been made to show that various non-specific agents, even including autogenous vaccines, may cause a closed focus of sepsis to become more active and so cause exacerbation of dependent symptoms, whether these are classed as mental or physical.

When however such a closed focus has been converted into an open one, the application of these therapies, which formerly made the symptoms worse, will cause an amelioration of such symptoms and thus tend towards or effect recovery.

Non-specific therapy may thus be said to alter the symptoms, making them better or making them worse dependent on the condition of drainage of the causal focus. It is very ancient observation that mental symptoms are not infrequently made worse at menstruation.

A study of cases such as have been described in the preceding series shows that, like non-specific therapy, menstruation may be associated with exacerbation or amelioration of mental symptoms. Exacerbation when the foci of sepsis are closed and amelioration when the responsible foci are open, healing or removed. It is well known that amenorrhoea may occur during the incidence of an acute infectious malady and cease when recovery from such an infection occurs. In the same way amenorrhoea frequently occurs in cases of mental disorder arising from chronic infective processes, and ceases when these causal lesions have been removed or have healed.

When amenorrhoea occurs in these cases of mental disorder, instead of the menstrual exacerbation, the moliminal exacerbation of mental symptoms may occur. These moliminal exacerbations are quite frequently met with and their existence shows that it is not the flux which is responsible for the exacerbation of the mental symptoms, but some underlying mechanism—which for convenience we will regard as the ovarian hormone.

In states of sepsis, epimenorrhoea may occur and epimenorrhoea may occur in states of mental disorder due to sepsis and there is no doubt that moliminal mental reactions as well as menstrual mental reactions may occur on a basis of epimenorrhoea. These and the epimenorrhoea may cease following removal of their common cause—the chronic infective process. Amongst its actions on other diseased tissues (e.g., pulmonary tuberculosis), it appears that an apparently normal ovarian hormone can activate the infective process in foci of chronic sepsis so powerfully that mental symptoms may be made better or worse depending on the condition of drainage in such foci. In the same way many other agencies can act non-specifically. Sunlight and ultra-violet light by their action on the skin cause the liberation of an agent which appears to act non-specifically.

Patients with mental symptoms arising from closed foci of sepsis may be made worse by exposure to strong dosage of ultra-violet light and sunlight ; but, when the closed foci have been converted into open, ultra-violet light produces a normal response. Especially appreciable from the mental aspect is a feeling of composure of relaxation, of warmth and drowsiness, followed by a bracing effect.

A study of the onset and termination of mental states arising from chronic infective conditions shows that, like the initial symptoms caused by the septic foci, the mental symptoms show a seasonal variation, e.g., nasal catarrh usually shows an exacerbation periodicity of six months, mental states arising from foci responsible for nasal catarrh may show a similar periodicity.

Where mental disorder has been the sequel of an attack of influenza, the mental symptoms generally become worse during the influenzal periods, autumn and spring, although the patient may show no other signs of influenza.

When the causative septic foci have been treated in such cases, recovery tends to occur in the warmer months of the year ; but, unless the septic foci have been dealt with, recovery will not ensue, in fact the mental symptoms may become worse during the hotter periods.

Many other mechanisms acting biochemically through the blood stream or by direct action on foci of sepsis may similarly cause exacerbation of mental symptoms.

In addition to its direct action on the brain, alcohol, by its action in causing congestion in closed foci, facilitates absorption of their toxic matter. In foci with effective drainage the resultant swelling of the tissues may block egress and so cause the existing drainage to cease altogether and toxic absorption to commence.

Secondary septic processes in the alimentary canal may produce toxic products, which act non-specifically on the foci as well as have their own particular toxic action.

In some cases these secondary processes may have to be dealt with surgically, but in many cases treatment by continuous colon irrigations is sufficient to remove exacerbating material of this character. Combinations of these various agencies producing exacerbation may act at one and the same time ; and, until all their origins are unravelled and dealt with, the mental symptoms will prove resistant to other treatment.

IN CONCLUSION.

I desire to acknowledge my indebtedness to my colleagues on the Resident, Research and Visiting Staffs of the Birmingham Mental Hospital, for their observations on and treatment given to the cases described in this communication.

Messrs. Burroughs, Wellcome and Co. have supplied the T.A.B. vaccine and sera, whilst the Crookes Laboratories have supplied the Colloidal Sulphur and Colloidal Calcium Oleate.

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II.—FROM THE CARDIFF CITY MENTAL HOSPITAL.

General Report.—By Dr. P. K. McCOWAN, M.R.C.P., D.P.M., Medical Superintendent.

A.—*Biochemical Laboratory.* Director : Dr. J. H. QUASTEL.

1. *Blood-Sugar Studies in Abnormal Mental States.*

The findings embodied in last year's report have been published by Drs. McCowan and Quastel (*J. Mental Science*, 1931, 77, and *Lancet*, October 2nd, 1931); and work is now in progress to determine how far patients who give a high hyperglycaemic index (i.e., who show a definitely disordered carbohydrate metabolism) vary in their physiological response to the administration of various internal secretions. Insulin is at present under investigation, and the evidence so far indicates that patients differ from each other in their behaviour towards this hormone. Insufficient work has been done as yet to arrive at definite conclusions.

2. *Nitrogen Metabolism in the Psychotic.*

Dr. M. R. Lockwood and Mr. D. R. Davies, M.Sc., have extended their observations on the nitrogen metabolism of psychotic patients. Their method has been to administer gelatin or glycine to fasting patients, and to observe the rate of increase and subsequent decrease in blood urea and amino acid concentrations. The work has not yet been completed, but observations on 40 cases suggest the following conclusions :—

(i) The patients may be divided into two classes, in the first of which the blood urea concentration increases at a slow rate for at least five hours after ingestion of the protein or glycine, and in the second of which the blood urea increases to its maximum in three to four hours, and then falls at a relatively rapid rate.

(ii) Most cases of dementia praecox and of stupor fall into the first class, whilst depressed patients form the majority of the second.

(iii) Determinations of blood creatinine and amino acid concentrations carried out simultaneously with the urea estimations show that these substances do not vary particularly from the normal in psychotic states.

3. *Action of Dyestuffs on Catalytic Activities of Tissues.*

The action of dyestuffs on certain hydrolytic activities of the tissues has been investigated by the Director. He has shown that in the case of a particular enzyme which converts an unsaturated acid into a hydroxyacid, dyestuffs of the congo red series are extremely toxic—congo red being poisonous at a molar concentration of 1 in 100,000,000. The dyestuffs are without effect in the body owing to the fact that the blood proteins combine with the dyes rendering them inert. It has been possible in this way to discover the amount of combination between blood and dyestuffs, and to show how this combination varies with an altered condition of the blood.

(Quastel.—“Dyestuffs and Enzymes.”—*Biochem. J.*, 1931, 25, 898.)

4. *Action of Drugs on Enzymes.*

Following up the work on dyestuffs, the Director turned his attention to the important trypanocidally active drugs which are connected chemically with congo red. He found that there is marked parallelism between those drugs which are trypanocidally active and those which are toxic to a particular hydrolytic enzyme. The work is of significance in indicating a novel method of attack in chemotherapy.

(Quastel.—*Biochem. J.*, 1931, 25, 1121.)

5. *Narcosis and Oxidations.*

The Director, in collaboration with Mr. A. H. M. Wheatley and Mr. D. R. Davies, is investigating the oxidations brought about by brain and the effect upon these of narcotics. This work may have significant bearings on the use of narcotics in the treatment of psychotics, and is of great importance in connection with the problems of biological oxidations in relation to the physiological activity of the brain.

The results, so far, are as follows:—

(i) The brain (cortex) oxidises glucose, fructose and mannose, but not galactose, mamitol, gluconic acid or the pentoses arabinose and xylose to any appreciable extent. It oxidises lactic acid, pyruvic acid, succinic acid and glutamic acid. Blood serum also increases the oxidation of brain.

(ii) The oxidations of lactic and pyruvic acids are almost identical in rate with that of glucose, and point to the probability that the oxidation of glucose in the brain proceeds through the intermediate formation of lactic and pyruvic acids.

(iii) The brain does not oxidise hexose-diphosphoric acid or 6·0 hexose-monophosphoric acid.

(iv) Using the methylene blue technique, the brain shows vigorous activating powers to most sugars and to other metabolites.

(v) The dialkyl barbituric acid derivatives (e.g., veronal, luminal, numal) have the effect of diminishing the oxidation of brain—the percentage inhibition affected by these substances in the presence of human brain being parallel with their hypnotic activities. The effects of these derivatives are found to be greatest with the brain. They have no effect in diminishing the respiration of yeast.

(vi) The substances whose oxidations are almost completely inhibited by the presence of these drugs are glucose, lactic acid and pyruvic acid. The oxidation of glutaminic acid is also affected, but that of succinic acid is quite undisturbed. These narcotics also prevent blood serum increasing the oxidation of brain.

It would appear from these results that the interference with the oxidation of glucose or lactic acid by the narcotics in question is directly connected with their hypnotic powers. These results will be published shortly, and further investigations on the problems involved are in progress.

Papers, other than those already quoted, published by the Director during 1931 are :—

1. "A Colour Test for O-Dihydroxy Phenols."—*Analyst*, 1931, 56, 311.
2. "Bacterial Enzyme Reactions."—*Ergebnisse der Enzymforschung*, I., 1932, 209.

B.—Pathological Laboratory.

The following routine examinations were made :—

Urine.—ordinary routine examinations, 674 ; microscopical, 47 ; bacteriological, 30 ; sugar estimations, 256 ; ketones, 21 ; urea estimations, 3 ; urea concentrations, 6.

Blood.—Glucose tolerance, 178 ; red and white cell counts, 176 ; differential leucocyte counts, 12 ; bacteriological examinations, 5 ; urea estimations, 8 ; agglutinations (T.A.B.) and dysentery, 8 ; Wassermann tests, 298 ; a few Van den Bergh reactions, and many examinations for malarial parasites.

Cerebro-spinal Fluid.—Bacteriological examinations, 2 ; colloidal benzoïn reactions, 43 ; cell counts, 45 ; boltz acetic anhydride reactions, 45 ; globulin reactions, 45 ; Wassermann tests, 51.

Sinus Washings.—A considerable number of bacteriological investigations were carried out on these. Sputums, 21 ; bacteriological examination of faeces, 47 ; fractional test meals, 2 ; a few pus examinations ; a few throat swab examinations ; a few histological examinations of post mortem specimens, and specimens obtained from operations ; and a few test meals.

C.—Psychological Laboratory.

The Relationship between the Hyperglycaemic Index and the Psycho-galvanic Reflex in the Psychoses.

Dr. Madeline R. Lockwood has concluded her investigation of the relationship between emotional tension (as given by the psycho-galvanic reflex) and the hyperglycaemic index. Her results, briefly, are as follows :—

(i) The psycho-galvanic reflex, being an inevitable response and outside voluntary control, can be used to supply objective evidence of affectivity.

(ii) A definite parallelism is shown to exist in psychotics between the affective state, as determined by the psycho-galvanometer, and the hyperglycaemic index.

(iii) States of increased emotional tension and consequent increased galvanic reactivity are associated with a sufficient increase of functional activity to cause a rise in the h.i.

(iv) Conditions in which clinical signs of increased emotional tension are unaccompanied by any rise in the h.i. are found to give normal or decreased galvanic reactions.

(v) Like the h.i., the affectivity as shown by the psycho-galvanometer is found to depend, not upon the type of psychosis, but upon the degree of emotional tension present at the time of the test.

(vi) The percentage of deflections obtained during the word association test varies approximately with the affectivity of the subject and can fairly be used as a means of comparison between different patients, provided the sensitivity of the galvanometer be kept constant.

These results are to be incorporated in a paper to be published by Dr. Lockwood in the *Journal of Mental Science*, April, 1932.

D.—Infection of the Ear, Nose and Throat in the Psychoses.

The routine examination of all newly-admitted patients for evidence of septic conditions in the ear, nose or throat continued to be performed in accordance with the research which had been started in the previous year. Nineteen cases were submitted to operation: 14 for nasal sinus investigation; 6 for enucleation of septic tonsils; and 2 for the removal of aural polypi.

The type of patient considered suitable for sinus investigation was that in which there was any suggestion of sinus involvement, as revealed by the routine examination, or in which the mental picture was suggestive of a toxic causal factor.

In the nasal investigations the technique for the collection of the material was that used by Mr. P. Watson-Williams. Saline wash-outs of the maxillary antra and ethmoidal and sphenoidal sinuses were made in all cases with the exception of an occasional sphenoidal sinus which proved inaccessible. Evidence of sinus infection was present in 4 cases; and in one of these pus was recovered from the maxillary antra; and in another from the antra and right sphenoidal sinus.

The remaining 10 showed no evidence of past or present infection in the cellular content of the saline washings or in cultural tests. Two of the patients were vaccinated to observe if any improvement in the clinical condition took place which would be attributed to this procedure. The autogenous vaccines used were ineffective, in that they did not produce any striking change in the opsonic index of the homologous serum; but both patients improved clinically, and one was discharged completely recovered from a confusional attack. In this latter case, one felt justified in associating her recovery with the treatment of her sinuses.

The work is being continued, operative treatment being carried out by Dr. A. A. Prichard, and bacteriological work being done by Dr. H. A. Scholberg.

E.—Gynaecological and Menstrual Conditions in the Psychoses.

During 1931, consultations on most of the 137 female admissions were held at fortnightly intervals between the Visiting Gynaecologist, Dr. G. I. Strachan, F.R.C.S., and the Medical Officer in charge of the female patients. The various points in the mental history and in the menstrual condition, as well as the ages of the patients, were carefully gone into; and in any case in which it was thought advisable, a gynaecological examination was made.

In the majority of cases thus examined, no physical lesion of any great account was found; indeed, it was remarkable in what a great proportion of cases the reproductive organs were physically normal on careful examination.

In 2 cases minor operations (dilatation of the cervix and curettage with exploration of the uterine cavity) were carried out. One of these was a case of severe menstrual haemorrhage, and the other a case of endometritis. In no case were the indications for a major gynaecological operation present.

These findings, in general, support the results of an investigation conducted by the Visiting Gynaecologist and by Dr. Ian Skottowe, in which it was found that the proportion of cases showing definite gynaecological lesions was not great, and that the mental result of putting right an organic lesion of this nature was often uncertain.

One paper dealing with the gynaecological aspects of mental disease is in the press, and several others are in preparation.

F.—*Sulphur Therapy in the Psychoses.*

During the year over 50 patients have undergone this treatment, which has consisted of three courses of ten injections with an interval of three weeks between each course. Six cases of general paresis have been treated without noticeable improvement, but it is only fair to state that the patients submitted for treatment were of an unfavourable type. The rest of the cases have been schizophrenics, chiefly of long standing, and melancholics who were showing signs of chronicity. Dr. Northcote and myself propose publishing our results at a future date, and only a brief note of our conclusions is necessary here.

It is our opinion that, while sulphur therapy is in no way specific in any of the psychoses, it is a valuable addition to our therapeutic armamentarium, and well worth an extended trial in early cases of schizophrenia, in advanced schizophrenics who are out of touch with reality or have obnoxious habits, and in manic-depressives where chronicity is threatening.

It would appear that, while it is possible that biochemical or other metabolic changes are set up in the organism, the effect of the treatment is largely psychological, in that the physical illness set up, with its pain and general discomfort, interrupts the phantasy life of the patient and forces reality upon him.

It is extremely important to institute occupational therapy as an early adjunct to the treatment, so that this new contact with reality may be maintained, and, if possible, increased. It was our experience that without the aid of occupational therapy the almost inevitable result was the fairly early loss of any improvement due to the course of sulphur.

III.—FROM THE WEST RIDING MENTAL HOSPITAL, WAKEFIELD.

A.—*General Report on Treatment Centre.*—By Professor J. SHAW BOLTON, D.Sc., F.R.C.P., Medical Director.

1. *Out-Patient department.*—This department was established in 1889, and is held twice weekly in the mental hospital.

No. of attendances in 1930, 1,216 ; 1931, 1,377.

	Males	Females	Total
Out-Patients on register on Dec. 31st, 1930 ...	71	107	178
Struck off register	23	38	61
Admitted during 1931	32	41	73
Remaining on register on Dec. 31st, 1931 ...	80	110	190

2. *The Operating Theatre and Recovery Rooms.*

The operating theatre and recovery rooms are in frequent requisition and the six clinical rooms are in constant use for routine medical and minor surgical treatment.

3. *Sun Ray Department.*

General and local treatments, 391 in number, have been given to 51 patients during the year.

4. *X-Ray Department.*

Apart from screening for diagnosis, 287 photographs have been taken, chiefly for injuries and diseases of bones, for foreign bodies, and for thoracic and abdominal disease.

B.—*General Laboratory Report.*—By Professor J. SHAW BOLTON, D.Sc., F.R.C.P.

1. *Widal Examinations for Typhoid and Dysentery of all new admissions.*

Widal examinations for typhoid and dysentery of all new admissions and of all probationer members of the staff have been continued and the figures given below are similar to those of previous years.

Admissions				Positive Flexner.	Positive Typhoid.	Negative.	Total.
Male	...	...	...	2	2	211	215
Female	...	...	...	9	0	188	197
Total	...	...	...	11	2	399	412
Probationary staff—							
Male	...	...	...	0	0	6	6
Female	...	...	...	5	0	70	75
Total	...	...	...	5	0	76	81

2. *Photographs.*

Photographs of all new admissions are prepared as usual, and numerous photographs of pathological specimens and preparations have been made. This has necessitated the preparation of nearly 1,000 bromide and silver prints and lantern plates.

3. *Routine Work of the Laboratory.*

A summary of the 4,803 routine examinations carried out in the Laboratory is given below :—

Faeces.—Bacteriological examinations, 2,521 ; Widal's, 1,546 ; urines, 114 ; histological preparations, 150 ; *Blood.*—Wassermann reaction, 96 ; C.S.F. (Wassermann, 71 ; Lange, 20). *Milk.*—Bacteriological and chemical, 84 ; *Sputa.*—For tuberculosis, etc., 61. *Miscellaneous.*—Post mortem scrapings, 50 ; pus, 31 ; blood counts, 24 ; blood cultures, 11 ; faeces for occult blood, 8 ; C.S.F. for culture and cell counts, 5 ; throat swabs for K.L.B., 5 ; swabs from Cervix for bacteriological examination, 5 ; blood (Van den Berg), 1.

Inoculations.—During the year 100 animal inoculations have been performed under the provisions of the Home Office licence, 86 guinea pigs and 14 rabbits being required for this work.

Examination of Milk.—Eighty-four milk samples have been examined during the year and in 7 instances the milk was found to be tuberculous.

Cooper's method for the cultivation of bacillus tuberculosis has been tried during the year and successful results have been obtained with specimens of sputum, pus, urine and scrapings from lungs and glands. A modification of the method is being applied to specimens of faeces.

Lange's Colloidal Gold-Sol.—Patterson's method for the preparation and standardisation of colloidal gold has been carried out during the year and is considered a distinct advance on all previous methods for the preparation of Gold-Sols for the Lange test.

Pathological Museum.—The collection has been augmented during the year by the addition of several new and interesting specimens.

4. The usual courses of training for students of the Faculty of Medicine of the University of Leeds, and for candidates for the Diploma in Psychological Medicine have been conducted during the year.

C.—*Asylum Dysentery and allied Infections (Thirteenth Post-War Report).*—
By Professor J. SHAW BOLTON, D.Sc., F.R.C.P., Dr. M. J. McGRATH,
D.P.M., and Mr. A. L. HOWDEN, F.R.M.S.

1. *Enteric Fever.*

The hospital has been free from cases of enteric fever during the year.

2. *Typhoid Carriers.*

Weekly bacteriological examinations of the faeces from the four female typhoid carriers have been continued throughout the year and the following is a summary of the results obtained :—

1.—A.E.C., age 79. Admitted 12.11.03. Detected as a typhoid carrier 19.1.28. No. of specimens examined, 53. No. from which *B. typhosus* was isolated, 47. No. negative for *B. typhosus*, 6.

2.—A.B., age 72. Admitted 24.3.96. Detected as a typhoid carrier 16.10.30. No. of specimens examined, 53. No. from which *B. typhosus* was isolated, 47. No. negative for *B. typhosus*, 6.

3.—E.M.R., age 53. Admitted 13.8.25. Detected as a typhoid carrier 23.10.30. No. of specimens examined, 52. No. from which *B. typhosus* was isolated, 41. No. negative for *B. typhosus*, 11.

4.—E.L., age 56. Admitted 5.11.15. Detected as a typhoid carrier 2.12.30. No. of specimens examined, 71. No. from which *B. typhosus* was isolated, 69. No. negative for *B. typhosus*, 2.

It may be mentioned here that typhoid carrier No. 4 was given $\frac{1}{2}$ litre of *B. acidophilus* milk daily for three weeks.

Instead of reducing the number of typhoid organisms excreted by this patient, the treatment appeared to have the reverse effect, pure plates of typhoid colonies being obtained on several occasions during the treatment.

3. *Dysentery during the year 1931.*

Ten cases of dysentery, one male and 9 female and all non-fatal, occurred during the year. Two of the cases, one male and one female, occurred in the dysentery isolation wards and were recurrent cases. The remainder occurred in the female chronic block. A summary of the cases and the results of the bacteriological examinations are given below.

1.—10.2.31. A.C., age 60. Ward 22 F* Admitted 5.5.26. Recurrent case. *B. dys. Flexner* "Y" isolated.

2.—12.3.31. G.G., age 49. Ward 36M.* Admitted 19.7.10. Recurrent case. *B. dys. Flexner* "V" isolated.

3.—4.5.31. M.S., age 53. Ward 32 F. Admitted 4.12.30. *B. dys. Flexner* "Z" isolated.

4.—4.5.31. C.S., age 58. Ward 32F. Admitted 10.5.29. *B. dys. Flexner* "Z" isolated.

5.—30.6.31. A.M.T., age 67. Ward 30F. Admitted 8.9.27. *B. dys. Flexner* "X" isolated.

6.—30.6.31. L.T., age 35. Ward 30F. Admitted 7.4.25. *B. dys. Flexner* "X" isolated.

7.—25.8.31. F.B., age 56. Ward 29F. Admitted 29.12.26. *B. dys. Flexner* "Z" isolated.

8.—2.9.31. E.B., age 29. Ward 29F. Admitted 7.1.31. *B. dys. Flexner* "Z" isolated.

9.—18.9.31. E.A.A., age 56. Ward 32F. Admitted 4.6.06. *B. dys. Flexner* "Z" isolated.

10.—27.9.31. E.H., age 58. Ward 32F. Admitted 20.1.14. *B. dys. Flexner* "Z" isolated.

* Dysentery isolation wards.

4. *Routine Bacteriological Examination of Faeces from new Admissions.*

As a result of these examinations, five patients were found to be excreting *B. Morgan* No. 1, and were transferred to the dysentery isolation wards.

In no instance this year has an organism of the Flexner type been isolated from the new admissions.

5. *Observations on the employment of Vaccines in Dysentery.*

During the year, dysentery contacts in Wards 32, 30 and 29 have received prophylactic injections of autogenous vaccines with beneficial results.

Ward 32, in particular, provides a noteworthy instance of the value of prophylactic inoculation. This ward is one of our largest chronic female sick wards, and the two cases of dysentery which occurred there on 4.5.31 were of such a mild type that the nursing staff only were inoculated. Four months later, however, two more cases of dysentery occurred, B. dys. Flexner "Z" again being the causative organism. Prophylactic inoculation was immediately carried out and no further cases of dysentery have occurred in this ward.

IV.—FROM THE WEST RIDING MENTAL HOSPITAL, WADLSEY, SHEFFIELD.

General Report.—By Dr. W. J. N. VINCENT, C.B.E., Medical Superintendent.

A.—*Routine Laboratory Work.*

The work of the Pathological Laboratory continues to be carried out by Dr. F. T. Thorpe, D.P.M., Pathologist and Assistant Medical Officer of the Institution, with the assistance of Mr. W. H. B. Vincent. The following is a brief summary of the work undertaken during the year 1931 :—

Urine.—Routine, 1,014; special examinations, 26. *Blood.*—Meinicke micro-reaction, 3; Meinicke clarification-reaction, 22; Citochol reaction of Sachs and Witebsky, 170; Widal's, 467; Search for malarial parasites, 47; cell counts, 24; various, 15.

C.S.F.—48 specimens were examined.

Bacteriological.—Faeces, 152; throat-swabs, 62; sputa, 37; pus, etc., 11.

Various Miscellaneous Tests.—Tinea tonsurans, 2; for occult blood, 21.

Material from 100 autopsies has been sectioned and examined and several suitable specimens have been sent to the Pathological Department of the University of Sheffield.

Typhoid.—One male case occurred in January, death ensuing in the third week of the disease.

Dysentery.—19 cases were notified, but only in eleven was B. dysenteriae (Flexner 10, Sonne 1) isolated from the stools. Of the remaining eight, two gave a diagnostic Widal test, and in the other six no bacteriological evidence of dysentery could be found.

In the course of the routine examinations of new admissions, three male dysentery carriers were detected. In one of these cases was there a history of previous residence in any mental hospital, but in one of the cases a history of a previous attack of dysentery was obtained.

The Citochol reaction test (of Sachs and Witebsky) for Syphilis was found to be both rapid and reliable. It is equally applicable to both blood and cerebro-spinal fluid. The Wassermann reaction is reserved as a confirmation test in positive or doubtful cases. This test is always carried out on our behalf at the Wakefield County Laboratory.

The deaths totalled 161 for the year. Autopsies were carried out on 88 males and 65 females, a total of 95 per cent.

B.—X-Ray and Ultra-violet Ray Department.

The work of the X-Ray and Ultra-Violet Ray Department continues to be efficiently carried out by Dr. Elisabeth Sykes. The work undertaken during the year has been as follows :—

X-Ray Department—

	Males.	Females.	Staff.	
Patients X-Rayed	82	76	31	= total 189
Screening only, 5 cases ...				
Number of films taken	339.			

Ultra-Violet Ray Department :—

	Males.	Females.	Staff.	
Patients treated	7	14	1	= total 22
Number of attendances ...	119	1,064	7	= total 1,190

Diathermy and Radiant Heat—

	Females.	Staff.	
Diathermy	1	1	
Radiant Heat	1	1	
Number of attendances : Female patients,	40 ; staff 12.		

C.—Dentist's Department.

The work of this department continues to be carried out by Mr. W. J. Law, L.D.S., Visiting Dentist to the Mental Hospital :—

Number seen.				Extractions.	Various.
Males	225			471	43
Females	189			556	27
Total	414			1,027	70

Mr. Law has also carried out an investigation of the teeth of patients suffering from the After-Effects of Encephalitis Lethargica, the results of which will shortly be published.

D.—Out-Patient Clinics.

The work at the Out-Patient Clinics at the Sheffield Royal Infirmary and the Royal Hospital was continued during the year.

Drs. Gillespie and Clegg assisting Dr. A. G. Yates at the Royal Infirmary, and Drs. Mathieson and Sykes assisting Dr. G. E. Mould at the Royal Hospital. Dr. Mould, however, resigned from the Royal Hospital in May, but the work continued to be carried on by Dr. Mathieson and Dr. Sykes. During the year another Out-Patient Mental Clinic was inaugurated at the Alma Road Municipal Hospital at Rotherham. Dr. Mould of the Grange, Rotherham, was appointed Physician-in-Charge, and Dr. F. T. Thorpe, D.P.M., Assistant Medical Officer at this Mental Hospital was appointed Assistant Physician. The work carried out at the three Out-Patient Clinics during the year has been as follows :—

The Royal Infirmary :—

Number of new cases	116
Number of attendances of old cases	743
Total number of attendances	859

Average number per session 17.

Classes of cases dealt with have been as follows :—

Manic-depressive states, 30 ; dementia praecox, 7 ; epilepsy, 13 ; g.p.i., 4 ; psychoneuroses, 39 ; other psychoses, 11 ; involutional cases, 12.

The Royal Hospital, Sheffield :—

Number of new cases...	...	...	...	...	...	119
Number of attendances	...	...	...	...	...	1,619
Total number of attendances						1,738

Average number per session 34.

Class of cases and numbers dealt with have been as follows :—

Manic-depressive states, 29 ; epilepsy, 25 ; primary dementia, 10 ; g.p.i., 10 , neurasthenia, 19 ; psychoneuroses and anxiety states, 8 ; paranoia, 3 ; arteriopathic, 3 ; neurological, 5 ; imbecility, 7.

Alma Road Hospital, Rotherham :—

This clinic was started on June 3rd. The total number of patients seen during the year, since the opening of the clinic in June, was 76, and the average weekly attendances numbered 15. Most of the cases were recommended by outside practitioners, and may be classified as follows :—

Psychoneuroses, 36 ; melancholia, 13 ; dementia praecox, 8 ; other psychoses, 6 ; organic brain lesions, 5 ; imbecility, 5 ; epilepsy, 3.

E.—Special Work.

1. *A case of Pick's disease and one of Alzheimer's disease.*—By Dr. F. T. THORPE, D.P.M. (Read at Autumn Meeting, 1931, of the Royal Medico-Psychological Association.)

A case of Pick's disease (circumscribed senile atrophy) is described and the clinico-pathological features contrasted with those in a case of Alzheimer's disease. These two presenile disorders are regarded as definite disease-entities, similarly characterized by profound dementia but differing in their focal symptoms and histopathological appearances.

Although Pick's disease has received considerable attention in continental journals, the writer has been unable to find a report of a case in English literature. It is undoubtedly rare, but the few cases that have as yet been published have shown much that is common in their symptomatology and pathology. Urechia, in a recent paper (*L'Encephale*, 1930, XXV, 728) has essayed a description of the malady.

Briefly, the characteristic clinical features of Pick's disease are progressive dementia accompanied by progressive aphasia and the absence of a history of a stroke. Their vocabulary is gradually reduced to the repetition of a few stereotyped phrases.

Pathologically there is an intense and striking cortical atrophy, which, while relatively diffuse, shows a more or less symmetrical localization to different regions (lobes or convolutions) with an intensity most marked to the naked eye and without following any definite law. The atrophy has a predilection for the association areas—the prefrontal, temporal, parietal and insular ; and an important feature is that the central and occipital convolutions remain relatively large and unaffected. Microscopically the lesions are degenerative, never inflammatory. Senile plaques and Alzheimer's fibrillary changes are not found and arteriosclerosis is usually absent or slight and insignificant. The condition appears to be a pure neural atrophy.

The case described is that of a single woman—A.P., admitted 11th August, 1921—whose father had died in this hospital from senile dementia. She had previously been healthy, capable and intelligent, but at the age of 50 commenced to show loss of memory. A period of maniacal excitement occurred 3 years later necessitating certification and admission. From then onwards there was a progressive apathetic dementia and a gradual diminution of spoken language characterized by reiteration of particular phrases. At the age of 58, her condition was one of profound dementia with a form of reiterative aphasia. She

degenerated into a resistive stuporose condition, death ensuing at the age of 62. Towards the end she had four epileptiform seizures. At the autopsy the brain showed an intense regional symmetrical atrophy (770 gm., whole brain after section) limited to the prefrontal and temporal lobes, the insula and hippocampal regions. Histologically the atrophic regions showed marked destruction of cortical nerve-cells and fibres. Senile plaques and Alzheimer's fibrillary changes were not found.

It is then pointed out that Pick's disease can be, and has been, diagnosed during life and that the differential diagnosis includes senile, arteriopathic and paralytic dementia, frontal tumours and Alzheimer's disease.

A case of Alzheimer's disease is then described. The patient was a married woman—F.E.S., admitted 17th February, 1928—age 56, who rapidly developed profound dementia without focal symptoms. Death occurred at the age of 62, and the terminal state was also characterized by epileptiform seizures. The autopsy showed gross cerebral atrophy without regional emphasis (878 gms.), and there was no appreciable arterio-sclerosis. Histologically numerous senile plaques were found scattered throughout the cerebral cortex, and Alzheimer's fibrillary changes were prominent especially in the hippocampal and frontal regions.

In the commentary some current views are given with regard to the nature of Pick's disease. Most authorities consider that the malady occurs independently of arterio-sclerosis and the so-called senium. In some cases there has been a family history of nervous disorder, a fact which led Gans to suggest that Pick's disease might represent an abiotrophy, a delayed heredo-familial affection. In the above case, the occurrence of senile dementia in the patient's father, lends support to this hypothesis.

2. *A case of Argyria.*—By Dr. F. T. THORPE, D.P.M.

Post-mortem findings :—J.W.W., male, age 46, admitted to the hospital on 21st February, 1929, suffering from recurrent melancholia, died suddenly as a result of Coronary Atheroma and occlusion. His skin presented the typical slate-grey colour of Argyria and his history states that nine to twelve years previously he thought he had contracted venereal disease, and following the advice of a chemist, took a large quantity of pills (apparently AgNO_3).

At the autopsy the pigmentation was found to be extensively distributed throughout the internal organs, viz. :—peritoneum, pericardium, dura mater, the intima of the aorta, the myocardium, liver, spleen and kidneys, the choroid plexus. Sections of these organs were demonstrated, showing the deposition of the particles of insoluble albuminate of silver. This pigment was concentrated in the portal tracts of the liver, in the malpighian bodies of the spleen and in the glomeruli of the kidneys.

With regard to the brain, it was remarked that, although the dura mater was pigmented, the pia-arachnoid and brain substance were free. On the other hand, the choroid plexus was jet-black in colour and contained a large quantity of pigment. It was pointed out that this strikingly illustrates the efficiency of the plexus as a barrier between the blood and cerebro-spinal fluid and that, therefore, the rationale of the one time popular silver treatment of nervous diseases (e.g., epilepsy) was fallacious. (Reported at Northern and Midland Divisional Meeting of the Royal Medico-Psychological Association, October, 1931.)

3. *A case of Septicaemia, due to Bacillus Pyocyaneus.*—By Dr. J. M. MATHIESON and Dr. F. T. THORPE.

F.S.H., aged 31, spoon and fork stamper, was admitted to the mental hospital on August 23rd, 1930, suffering from Dementia Praecox of the Katatonic type. Mentally, he remained mute and resistive during the whole course of his illness, physically he was generally debilitated but no

active organic disease was detected. On November 1st, 1930, he developed an attack of diarrhoea with very offensive stools which when examined bacteriologically showed no abnormal organisms. After treatment with Salol and intestinal lavage the stools became less frequent, less offensive, and part-formed. On November 7th, a pustular eruption appeared on his lips and chin and the mucosa of his mouth, tongue and throat was covered with a dirty white very tenacious membrane, a swab from which grew a pure culture of *B. Pyocyaneus*. Next day his temperature rose to 101.2 and his pulse was 128; there was no sickness and he took sufficient nourishment. On November 10th, 1930, he had difficulty in swallowing and became dyspnoeic, his temperature was 99.6, pulse 96 and at 9 a.m. he suddenly collapsed and died, being quite conscious to the last.

At the autopsy, a marked feature was the localization of the infection to the gastro-intestinal tract. There was a membranous stomatitis, an acute catarrhal enteritis throughout the whole bowel, particularly marked in the descending colon. There was no ulceration. The heart was flabby. The spleen weighed 240 gm., and was congested, swollen and soft. The liver and kidneys were congested but otherwise healthy. The brain showed marked hyperaemia of the pia-arachnoid. Cultures were made from the sputum, stomach contents, small intestine, large intestine, heart blood, spleen, urine and c.s.f. A growth of *B. pyocyaneus* was obtained from all except the spleen, urine and c.s.f.

This case supports the opinion of Park and Williams that, though ordinarily *B. pyocyaneus* is but slightly pathogenic for man, in cases of general debility it may become a dangerous source of infection.

Reference: Park and Williams. *Pathogenic Micro-Organisms*, 1925, 418.

4. *Chronic Epidemic Encephalitis*.—By Professor A. J. HALL, M.A., M.D., D.Sc., F.R.C.P., Consulting Physician to the Hospital.

During the year 1931 further investigations have been carried on in connection with the various conditions found in Chronic Epidemic Encephalitis, particularly with reference to the so-called Oculo-gyric attacks, which are present in from 15 to 20 per cent. of post-encephalitic Parkinsonians. The possibility of a relation between these and the disorders of sleep which have, from the first, been such a striking feature of Epidemic Encephalitis, has called for investigations as to the position of the eyes in normal sleep. A large number of observations on this point have, therefore, been made at this Hospital and elsewhere by various resident medical officers, as opportunity has offered, and much valuable information has been collected on this point, which whilst confirming similar observations scattered throughout older literature, has renewed interest in the subject, and added to our knowledge.

The result of these observations has also led to investigations being made on the movement of the eyeballs in ordinary closure of the lids, and cinematographic pictures have been taken in suitable cases. From these, certain facts about the movements of the eyeballs when the lids are closed and opened have been observed, which, so far as can be ascertained were not previously known, at any rate they are not common knowledge. An account of these will be found in my Schorstein Lecture, delivered at the London Hospital last October, and published in full in the *British Medical Journal* for November 7th.

Further studies have also been made by Dr. C. G. Imrie, Lecturer in Physiology at the University and Assistant Physician to the Royal Hospital, Sheffield, in connection with what appears to be a unique case of Bradypnoea in one of the Chronic Encephalitic cases at this Hospital, a brief account of which was read before the annual meeting of the Association of Physicians of Great Britain and Ireland in April. This case was also demonstrated to the Physiological Society at one of its meetings.

It is hoped that a full account of it will be published shortly. The rooms set apart for research work are now nearing completion and will shortly be ready for use, when it is hoped to continue this work and to extend it in various directions.

5. *Report of work carried out at the University of Sheffield and at the South Yorkshire Mental Hospital.*—By Dr. ELIZABETH COWPER EAVES, D.P.M., Honorary Neuro-Pathologist to the Mental Hospital.

The following paper has been published during 1931 :—

Some Observations on Calcium and Phosphorus in the Brain in different conditions.

This paper is based on chemical and histological investigations carried out on 39 brains, and included 9 from cases of chronic epidemic encephalitis, 8 from status epilepticus, 6 from general paralysis of the insane, and 4 from Huntington's Chorea. It was found that abnormal function of the nervous system may be associated with chemical alterations in the brain without necessarily any definite histological changes. The comparatively slight loss of phosphorus compounds in chronic epidemic encephalitis is in contrast with its excessive disappearance in degenerative nervous diseases. A very low phosphorus content was found in 3 brains from cases in which epilepsy was associated with mental deficiency and Dyspituitarism. In view of the physiological significance of calcium in the normal functioning of the nervous system it is to be noted (1) that an excess of calcium compounds was more common in Epidemic Encephalitis than in other conditions, (2) that a diminution of calcium was found in four cases of Huntington's Chorea.

(E. C. EAVES, *British Journal of Experimental Pathology*, April, 1931, Vol. 12, p. 113.)

Chronic Epidemic Encephalitis.—Investigations are still being made on the brains from 16 cases. Some evidence of attempts at repair in the cortex has been obtained. (A demonstration of the pathological changes in this disease was given at the Meeting of the Northern Association of the British Medical Association in Sheffield in June, 1931.)

V.—FROM THE WEST RIDING MENTAL HOSPITAL, MENSTON, LEEDS.

Report of Clinical and Pathological Investigations.—Communicated by Dr. S. EDGERLEY, Medical Superintendent.

A.—*Routine Laboratory Work.*

The following is a summary of the work carried out during the year :—

Histological.—Pathological tissues, 16; blood films and differential counts, 70. *Bacteriological.*—Faeces, 20; pus, 4; throat swabs for b. diphtheriae, 20; sputa, 54; pathological material from farm, 4; milk samples, 40; Meinicke reactions, 30. *Chemical.*—(Additional to routine urine examinations and special work): Urines, quantitative, 200; blood sugars, 25; milk, complete report, 5; vinegar samples, 2. *Post-mortems.*—95 (71 per cent. of the deaths).

B.—*A Note on the Carbohydrate Tests of Hepatic Efficiency.*—By Dr. JOHN RUSSELL, D.P.M.

(1) The work previously reported has been continued during the year and the investigations extended to cases other than those of idiopathic epilepsy.

(2) The galactose test and the laevulose test compared.

(a) Difficulties have been experienced in interpreting the blood sugar curve following the ingestion of the standard 40 gm. of galactose, the

curve being much higher and much more prolonged than that following 40 gm. of laevulose, thus :—

			Blood sugar in milligrammes.				
			Fasting.	30 min.	60 min.	90 min.	120 min.
Case 65.	Laev.	...	102	146	125	102	
Epilepsy.	Gal.	...	116	204	204	152	130
Case 53.	Laev.	...	110	110	122	122	105
	Gal.	...	090	129	167	138	135

If the criterion of liver inadequacy be a delayed return to the fasting blood sugar level, these cases would be regarded as giving a negative result with laevulose and a positive result with galactose. Results of this order have been obtained in 12 cases of the 64 epileptics in the series.

(b) In none of the 32 cases which gave an atypical curve either for laevulose or galactose, was a positive result obtained for both sugars, nor was any alteration of the serum pigments detected by Fouchet's test or by the Van den Bergh reaction.

(c) With galactose as with laevulose variations in the response to the test are met with in the same patient from time to time. This variation is not peculiar to epilepsy and has been noted in non-epileptic patients.

(3) A perusal of the recent literature on these tests shows that the galactose test is supplanting the laevulose test for the measurement of hepatic efficiency. Considering the facts that the present investigations have been conducted largely on patients who are in robust health, who show no clinical signs of liver disease, and who offer no corroborative evidence of liver damage at the examination of the serum pigments, the analysis of the 150 blood sugar curves which have been obtained, would show that the frequency of the so-called "atypical response" to laevulose, and to galactose especially, would discredit these tests as tests of hepatic efficiency.

(4) Carbohydrate tests of hepatic efficiency have been criticized on the ground that tissues other than the liver participate in the metabolism of galactose and laevulose. It is therefore of interest to note that, if the atypical response to galactose or to laevulose be regarded as an indication of disturbed general metabolism, the investigations conducted on excited cases show that the administration of sedative drugs such as sulphonal, and chloral hydrate (which are, of course, toxic) does not appear to influence the type of result obtained.

VI.—FROM THE WEST RIDING MENTAL HOSPITAL, STORTHERS HALL, KIRKBURTON.

A.—*General Report.*—By Dr. C. W. EWING, D.P.M., Medical Superintendent.
Laboratory Assistant, Mr. J. A. BURGESS.

During the year, 4,740 examinations were carried out in the Hospital Laboratory as follows :—

Blood.—Meinicke, K.R., 494 ; W.R., 494 ; Widals, 1,246 ; malarial films, 278 ; cell examinations, 114 ; differential counts, 36 ; Arneth counts, 85 ; blood sugar, 100 ; Van den Bergh reactions, 3.

C.S.F.—Meinicke, K.R., W.R., colloidal gold, Ross Jones globulin cell counts, Boltz acetic anhydride, 80 each.

Dejecta.—Stool cultures, 235 ; urines, 526 ; urine estimations of glucose, 26 ; ketone tests, 52.

Examinations (members of staff).—Widals, cultures, etc., 213. Throat swabs and pus specimens, 10; sputa, 18; milk, food, water, 16; pathological sections, 163; post-mortems, 150.

Blood.—Results of serological tests in all admissions during the year :—

Admissions.	W.R. +	M.K.R. +
Males, 239	39 (16·31 per cent.)	39 (16·31 per cent.)
Females, 255	20 (7·84 per cent.)	15 (5·88 per cent.)
Total 494	59 (11·94 per cent.)	54 (10·93 per cent.)

C.S.F.—Results of W.R., in c.s.f., of those cases giving a positive W.R., in blood :—

Blood, W.R. +	W.R. +	W.R. —	Died before C.S.F. obtained.
Males, 39	29	7	3
Females, 20	11	4	5
Total 59	40	11	8

In addition there were three cases in which the clinical features suggested a diagnosis of neuro-syphilis but whose W.R. in the blood was negative. The reactions of the c.s.f., were positive and the subsequent clinical history of these three cases left little doubt as to the diagnosis of g.p.i.

In a further 21 cases an examination of the c.s.f., was carried out. The results were negative.

The following summary is submitted of the blood reactions to the Wasserman and Meinicke tests on all admissions over a period of three years, 1929-31.

Admissions.	W.R. +	M.K.R. +
Males, 601	100 (16·63 per cent.)	99 (16·47 per cent.)
Females, 662	42 (6·34 per cent.)	43 (6·49 per cent.)
Total 1,263	142 (11·24 per cent.)	142 (11·24 per cent.)

In reviewing the results on these 1,263 admissions there were 30 instances in which the two reactions in the blood did not agree, i.e., 15 gave a positive W.R., with a negative M.K.R., and 15 gave a negative W.R., with a positive M.K.R., thus giving a correlation of 97·63 per cent.

The results of examination for the Meinicke reaction in the c.s.f., were so unreliable that the figures obtained were without value and no attempt has been made to classify them.

M.K.R.—The test used in this laboratory is a simplification of the standard Meinicke reaction (tube D alone being used) as suggested by Prentice (*Lancet*, 24.1.31, p. 136). The modified test is simple, inexpensive and does not entail the use of any elaborate apparatus.

Boltz Acetic Anhydride Test.—This test was made in 80 cases, in conjunction with the Wasserman and colloidal gold tests, and in every case agreed with them.

Agglutination tests were carried out on all admissions and new staff during the year for enteric and dysentery. In no case was a positive enteric reaction found. All cases giving positive reaction to the dysentery group were further examined by stool cultures but with negative results.

Enteric.—Two cases of enteric fever were discovered amongst the female patients. The patients and staff who had been in contact with these cases were examined. These consisted of 245 patients and 47 staff in four wards on the female side. No further cases or carriers were discovered.

Dysentery.—There were no cases of typical dysentery discovered during the year. An outbreak of diarrhoea occurred in the autumn, and in routine examination of the stools in these cases an atypical *B. dysentery* Flexner was isolated in 7 male and 17 female cases.

Induced Malaria in G.P.I.—The treatment of selected cases of g.p.i. was continued. Within the year 25 patients (19 males and 6 females) were treated. Thirteen of those are showing varying degrees of improvement, in 8 there is no noticeable change and four died. The number of patients treated to date (four years) is 75, with the following results.

Summary of Malarial Therapy over the past four years :—

				M.	F.	Total.
Improved and discharged	...	...	...	*10	2	12
Improved	...	...	...	21	7	28
Showing no change	...	...	...	13	3	16
Died	...	...	...	17	2	19
Total cases treated				61	14	75

* 1 male relapsed and returned.

B.—Endocrine Function in Dementia Praecox.—By Dr. MARION C. ALEXANDER.

A series of female patients was examined to determine the presence or absence of endocrine imbalance in dementia praecox. Similar investigations have been done previously in male cases by other workers.

The investigation of each case comprised a thorough physical examination, together with laboratory tests, and the application of the thyroid test, and the adrenalin subcutaneous test (Goetsch reaction). In the clinical examination, particular attention was paid to such conditions as disordered menstruation, abnormal growth of the skeleton, muscular dystrophies, trophic changes in the hair and nails, myxoedematous changes, sluggish peripheral circulation, obesity, dysgenitalism, relationship of height and weight, altered secretion of sweat glands, and subnormal pulse-rate, temperature and blood pressure. The laboratory tests were the examination of the urine and the estimation of blood sugar in each case.

Of the 40 cases investigated, 4 showed no evidence of endocrine imbalance. These cases were of the paranoid type. The remaining 36 cases showed degrees of endocrine disturbance as evidenced by the physical examinations and the laboratory tests.

No case displayed any obvious disorder of the thyroid gland, but minor degrees of hypofunction and hyperfunction were discovered by means of the thyroid test. There were 5 cases of hyperthyroid reaction, and 30 cases of hypothyroid reaction to the test.

Low blood pressure was associated with a faint reaction to the adrenalin test in 20 cases. In 17 cases the adrenalin reaction was normal, and a very sharp reaction to adrenalin occurred in one hyperthyroid case. 2 cases refused to submit to this test.

Decreased sugar tolerance was found in 7 cases. Of this number, 1 case was associated with glycosuria, and the blood sugar curve was diabetic in type; 5 cases were associated with a hyperthyroid reaction to the thyroid test, and the remaining case showed an atypical curve with a high fasting level and sustained hyperglycaemia. In 24 cases there was an increased sugar tolerance, 22 of which were in hypothyroidal patients; 5 cases refused to submit to the test, and 4 cases reacted normally.

In this series there were very few cases showing stigmata of degeneration, such as the "ape-like hand" described as occurring frequently in dementia praecox. There were no cases of dysgenitalism.

Conclusions.

1. Cases of dementia praecox showed no marked departure from the normal as regards physical development and presence of stigmata, or atavistic signs.

2. Physical changes that might be ascribed to hypofunction of sex glands, such as dysgenitalism, are absent in this series.

3. Gross signs of thyroid disorder are rare, but minor degrees of imbalance occur.

4. The chief physical manifestations in dementia praecox seem to be at the vegetative level. Associated with disturbance of the vegetative nervous system are minor degrees of endocrine imbalance.

5. Metabolism is definitely disordered, the majority of cases showing a hypo-oxidative condition of the body.

6. There is much evidence to support the view that the psychosis is a mal-adaption to environment; that the mental symptoms become prominent at periods of physiological stress, such as puberty, child-birth and the menopause, and varying degrees of endocrine-autonomic disturbance during these periods is a natural consequence.

VII.—FROM THE LANCASHIRE COUNTY MENTAL HOSPITAL, RAINHILL.

Report of Pathological Investigations and General Routine Examinations.—

Communicated by Dr. E. F. REEVE, Medical Superintendent.

A.—Routine Laboratory Work.

The following is a summary of the work carried out during the year :—

Urine Examinations.—Routine chemical and microscopical, 370 ; bacteriological, 6 ; sugar estimations and examinations for acetone and diacetic, 20. *Stools.*—Complete examinations for enterica organisms, b. dysenteriae, etc., 106. *Sputa.*—For b. tuberculosis, 68 ; for the purpose of preparing autogenous vaccines by the pathogen-selective method, 12. *Pus.*—Examined for pathogenic organisms, 20. *Vomit.*—For occult blood, etc., 3. *Vaccines.*—Autogenous, 6 ; by the pathogen-selective method, 4. *Blood.*—Counts (total and differential), 19 ; films, 89 ; sugar estimations, 6 ; Van den Bergh's reaction, 5 ; cultures for organisms, 4 ; *Pathological fluids.*—Pleural, etc., 4.

Blood examinations by Dreyer Ward Sigma (Σ) reaction were carried out in 507 cases. The C.S.F. was examined in 191 cases, Lange's colloidal gold reaction, and the Nonne-Apel reaction being employed in all cases.

Post Mortems, 93 (M. 51, F. 42), being 55 per cent. of deaths. In the course of routine histo-pathological examination of post-mortem material special attention was directed to cases of dementia praecox to demonstrate the intense fibrosis of the organs which is such a constant and prominent feature in this disease.

Periodical examinations of the milk supplied from the Hospital farm for Tubercle bacilli, and the drinking water examined bacteriologically.

Routine examinations have also been carried out in this Laboratory for the local Public Assistance Institution (Whiston) as follows :—Blood Sigma's (Σ), 21 ; c.s.f., 4 ; sputum for T.B., 22 ; pus for lesions, 3 ; urine, 1 ; pleural fluid, 1.

X-Ray Department.—In addition to the routine diagnostic X-Ray examinations, a series of chest radiographs have been made of cases of dementia praecox, with a view to recording the measurements of heart and aorta as a further corroboration of the condition of infantilism of the cardio-vascular system which has for many years been demonstrated during post-mortem examinations in this disease.

B.—*The Treatment of Mental Disorders by Pyrexia produced by Diathermy.*—By Dr. C. B. BAMFORD, D.P.M.

In June, 1931, the treatment of certain mental diseases, principally general paralysis, was tentatively begun at Rainhill Mental Hospital by hyperpyrexia induced by high frequency currents passed through the patient's body. This method had originated in America, and the very favourable clinical reports published by such early exponents as Neymann and Keonig of Chicago, and Jones of Portland, gave rise to considerable optimism as to the usefulness of this new mode of treatment.

It is not proposed to deal at great length in this account with the special technique of this treatment, but some reference to the general principles must be made here. The high frequency currents, generated by a diathermy instrument, are passed into the patient's body by means of large flat metal electrodes, which are applied to the dorsal and ventral surfaces of the trunk and retained in position by a laced linen corselette. The patient's bed is prepared by spreading a rubber sheet over the mattress on which three blankets are placed well tucked in. The patient lying on this is covered with a blanket and another rubber sheet. Finally more blankets are placed until about nine in all cover the patient who is firmly tucked in all around to prevent all possible loss of heat. The transmission of high frequency currents through the body generates considerable bodily heat and as this is not permitted to escape, the bodily temperature quickly rises. The temperature is taken at 15-minute intervals and carefully charted. It is usually found that, at the end of three to four hour's uninterrupted application of the current, the temperature attains the neighbourhood of 105° , and at this point, the electrical power is switched off, but the arrangement of the bedding is not yet disturbed. The temperature maintained for a short time, falls slowly at first, but after an hour the electrodes are removed and the temperature falls more sharply and reaches the normal level within four hours or so.

The treatment of patients was busily continued at this hospital until November when a particularly restless patient, who had to be restrained by chemical means so as to allow the desired temperature to be reached, was found to be rather severely blistered on removal of the electrodes. In endeavouring to ascertain the cause of this casualty, it was thought that the electrodes had, through constant use, become defective, and, in view of this untoward experience, further treatment has been suspended, while the defect in the electrodes is being investigated by the Victor X-Ray Corporation, the manufacturers of the instrument. We are still, at the time of writing, awaiting their report and recommendations, and meanwhile have reverted to the use of malarial plus tryparsamide therapy.

Since the inception of this form of treatment, some 21 patients have been subjected to treatment. Of this number, 13 have been cases of general paralysis, 4 of melancholia, and 4 of dementia praecox. In the case of the general paralytics, a pyrexial course analogous to that of malaria, was aimed at and in a few instances achieved. Usually applications of current were given bi-weekly, but occasionally because of the great demands on the instrument (we had only one) treatment was limited to weekly intervals. In the case of the only female patient, a very fatuous grandiose general paralytic, treated by this method it was found possible to give her pyrexial doses on alternate days, and the applications were continued until she had had 16 elevations of temperature averaging 104.5° . Six cases of general paralysis received at least 12 pyrexial doses at an average temperature of 104.6° , but in the case of the remaining general paralytics in this series, treatment had to be restricted or discontinued for sundry reasons. Of the 13 general paralytics treated in this series only one showed any clinical improvement, and this particular patient had received a course of 12 injections of tryparsamide concurrently with his electrical treatment. This man has been discharged from hospital and appears to be keeping well. The remaining general paralytics

treated by this method have shown no tendency to go into remission and three of them are dead. With regard to the four melancholia patients only one received a full course of 12 pyrexias, averaging 102.6° and he, it is pleasing to report appeared to respond well, manifesting considerable improvement, although he had been a patient for three years prior to this treatment. Several weeks following his treatment he had improved sufficiently to be discharged. The other three cases in this category tolerated very little pyrexial treatment and have shown no response.

The four cases of dementia praecox treated were very dull, apathetic, taciturn, withal passive patients, whose bodily condition was very satisfactory. It was thought that these four patients, carefully selected, would be amenable to treatment and would, if not lending that co-operation which is so desirable, not resist or obstruct. Much to our disappointment only one case could be prevailed upon to submit to a reasonable number of pyrexias, the others becoming resistive and unmanageable during the initial treatment. None of these four cases showed the least improvement.

It may be reasonably objected that with such a small series of cases under examination, several of whom not receiving an adequate course, it is hardly fair to draw any definite conclusions as to the value of this mode of treatment, nor is it justifiable to offer any harsh criticism. On the other hand there can be no objection raised to making some observations pointing out the advantages and disadvantages of this form of pyrexial therapy over any of the more usual methods which are now in general use.

During our experience with diathermy at Rainhill, a few of our patients, in spite of the precautions taken, have received burns, fortunately of a superficial character. The risk of burns or blistering is always in our opinion a source of great anxiety to those who are administering the treatment or tending the patient during the application. With quiet, submissive, co-operative patients, this risk may be very small, even negligible perhaps, but unfortunately very few cases of general paralysis, especially in the early or acute stages, can be depended upon to submit to this treatment with unruffled calmness and equanimity. On the contrary, it has been our experience that a patient who, at the beginning of the pyrexia appeared tranquil and co-operative, usually became very restless, even rough and violent, as the thermometer rose above 103° , and his thermal sensations became a matter of real concern to him. It is during this restless phase that the danger from burns becomes a very real one, and the chances are that during the motor restlessness, in spite of every precaution, the patient may manage to displace the electrodes from their original safe position and cause a great concentration of current in a given skin area, resulting, of course, in a burn.

If it is desired to persist with the treatment under such conditions of motor restlessness, all too common until the temperature has reached the desired limit, say 105° , the medical attendant has one of two alternative courses open to him. He can instruct his nursing staff to restrain and to control the patient by physical means, or he can resort to the use of sedative drugs such as paraldehyde, orally or morphine, or hyoscine hypodermically. The latter course is perhaps the more effective, but has the distinct disadvantage of rendering the patient incapable of informing his attendants when he feels that he is being burnt.

Each pyrexial occasion occupies in all about 8 hours, during which time at least one nurse, often more, must be in constant and close attendance, whilst it is very desirable that the medical officer should pay frequent visits to his patient.

Such attendant risks restrict the employment of this method to patients who can offer some degree of co-operation, a restriction which does not seem to apply to the other forms of pyrexial therapy. On the other hand, provided the patient is quiet and restful, a poor physical condition, even the presence of organic disease such as arterio sclerosis, cardiac disease,

does not offer any serious contra-indication to its employment. Considering the great diaphoresis which is induced during this treatment, it is surprising that there has been recorded in our series, so far from any loss of bodily weight, in most cases, a distinct gain in weight following the treatment. At the conclusion of the daily pyrexial dose, i.e., when the temperature has fallen to normal again, the patient appears to be suffering no ill effects and even at the end of a long course, comprising 12 or more pyrexias, the patient's physical condition has undergone no reduction or deterioration, as is the case at the termination of a malarial course of the average 10 or 12 rigors.

It may be that our limited experience of diathermy at Rainhill has been exceptional and unfortunate, or that we have not had the most suitable type of patient for the treatment. However this may be, the fact remains that our results are very poor and frankly disappointing up to the present.

Beyond employing this treatment again tentatively, in suitable and selected cases of general paralysis, as soon as we are assured of a reasonably safe technique, we are not encouraged to adopt diathermy as the standard treatment of general paralysis in this hospital in lieu of the methods already in use and favour.

In conclusion the advantages and disadvantages of diathermy are summarized as follows:—

Its Advantages:—(a) The pyrexia is under complete control throughout the treatment. Applications can be given at any time and to any number.

(b) Prolonged treatment by this method does not produce physical prostration and weakness.

(c) It is possible to give this mode of treatment to patients who are aged, marasmic, debilitated or even affected with organic disease.

Its Disadvantages:—(a) It can only be administered with safety to patients who are quiet, restful and co-operative.

(b) The great danger of burns due to motor restlessness seriously restricts the scope of this method.

(c) There is no evidence in our experience to assume that it is any more effective in producing a clinical remission than malaria.

I am indebted to Dr. E. F. Reeve, the Medical Superintendent, for his valuable help and suggestions.

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C.—*A Histological Study of a Series of Cases of Acute Primary Dementia.*
—By Dr. C. B. BAMFORD, D.P.M., and Mr. H. BEAN, Head Laboratory Assistant.

During the last few years at Rainhill Mental Hospital, an investigation has been carried out into the clinical and pathological features of dementia praecox in its so-called acute or malignant form. A description of the characteristic clinical features and of the gross morbid anatomy was presented in an article which appeared in the *Journal of Mental Science* in January, 1929, but it may be of advantage to restate the conclusions arrived at in this preliminary inquiry.

1. That dementia praecox like so many other chronic disorders occasionally runs a very acute course.

2. That it should be considered in the light of a physical disease.

3. That the disease exhibits a constant and characteristic pathology which may be summed up thus :—

- (a) Infantilism of the cardio-vascular system.
- (b) General fibrosis of the organs, including the endocrine glands.
- (c) A large complex type of cerebrum.

No attempt was made at that time to ascertain the microscopic pathology, but in the meantime a good deal of material has been collected from post-mortems held on suitable cases of acute dementia praecox with a view to investigating the histological changes found in this disease. Unfortunately, few cases of this disease which come to autopsy are the pure uncomplicated type, and consequently much material has had to be rejected on account of the association of some intercurrent bodily disease, such as tuberculosis, which might conceivably modify or mask the true changes.

For the purpose of such an investigation as this, Dunlap¹ has formulated certain conditions which we, however, have felt justified in slightly modifying without we hope, detracting from the value of our findings. The following are the conditions which we have endeavoured to satisfy throughout our investigation :—

1. Clinical diagnosis confirmed by the Medical Superintendent of this Hospital.

2. Age of the patient not over forty years.

3. Death has occurred by a relatively acute process, and not complicated by or accelerated by any other bodily disease.

4. Post-mortem examination held as soon after death as possible to eliminate the possibility of dissolution changes. It is expedient here to make a slight digression for the purpose of describing the laboratory technique employed in the preparation of material under examination.

The material is immersed direct from the post-mortem table in a solution of equal parts of Müller fluid and 10 per cent. formalin for two or three weeks, the fluid being changed at intervals.

Portions of suitable size are then selected for microscopical examination, and are passed through a series of alcoholic solution in increasing strengths to absolute, and are finally cleared in xylol. Then they are "blocked" up in paraffin wax and cut in the usual manner. The stains employed in this laboratory comprise Heidenhain's haematoxylin, Ehrlich's haematoxylin, toluidin blue, and a modified Papenheim's stain.

It is now proposed to present a detailed description of the microscopical appearances of the brain, viscera, and endocrines in three typical cases of this disease in which it has been found possible to satisfy all the conditions stated above. One of these cases, it is interesting to observe, was fully described as regards the clinical features in the previous article.

(*Vide* Case No. 2, N.W.)

Case No. 1. N.W. *Pineal gland* showed no abnormality macroscopically or microscopically. *Pituitary body* showed no departure from the normal. *Thyroid*.—Macroscopically, appeared normal; microscopically, vessels greatly dilated and filled with colloid, whilst there was some increase of fibrous tissue between the vesicles but not to the extent sometimes found in these cases; an infiltration of lymphoid type of cells was observed. *Adrenals*.—Macroscopically, were very tough and yielded on section a "grinding" sensation; microscopically, there was a marked increase of fibrous stroma between the columns of cells in the *Zona glomerulosa* and *Zona fasciculata*. *Testis*.—Macroscopically, normal appearance; microscopically, a condition was seen almost identical with that of a gummatous process showing areas of necrosis, together with diffuse fibrosis and a periendarteritis of vessels. This condition was observed in both organs. *Spleen*.—Macroscopically, very small and dense weight 77 gm.; microscopically, showed much more fibrous tissue than normal, also much congestion and extravasation of blood pigments. *Liver*.—Macroscopically, was very dense and engorged weight 1,225 gm.; microscopically, exhibited marked cloudy swelling of liver cells with some intralobular fibrosis. *Kidneys*.—Weight, 128 and 125 gm. Both organs were acutely congested and very dense on section, but with readily stripping capsules. Microscopically there were many areas of fibrosis intratubular, and in places appeared to cause constriction of a number of tubules with

consequent areas of intense local congestion. *Pancreas*.—Macroscopically and microscopically no lesion observed. *Heart muscle*.—Macroscopically firm and of brownish colour, but exhibited no abnormalities on microscopic section. *Brain*.—Weight 1,533 gm.; was large and of firm consistence. The convolutional pattern was definitely above the average with large well-formed gyri and deep sulci. Generally it was above the average. Microscopically the following areas were examined: (1) Prefrontal, (2) Central top (pre-Rolandic), (3) Calcarine, (4) Crura cerebri. In the prefrontal cortex the nerve cells were of good shape and normal in distribution. There were, however, numerous nerve cells scattered throughout the white matter, a condition suggestive of congenital defect. The whole cortex and white matter showed intense congestion, the small capillaries being especially prominent. In the Rolandic area the congestion was equally marked. The nerve cells were generally normal with the exception of the large motor "Betz" cells which showed Chromatolysis and an almost entire absence of Nissl bodies. Although the nuclei were centrally placed, they stained faintly, the nucleoli standing out very conspicuously by contrast. Both the sections of calcarine and crural areas presented no abnormalities of note apart from acute congestion.

Case No. 2. A.B.—*Pineal body*.—Macroscopically appeared normal. *Pituitary body*.—Was small, otherwise normal, both macroscopically and microscopically. *Thyroid*.—Macroscopically normal; on microscopical section there was a definite increase in the inter-acinar fibrous tissue with some thickening of the blood vessels. *Adrenals*.—Macroscopically dense, on microscopical section showed a great increase in the fibrous tissue between the columns of cells. *Testis*.—Macroscopically, smaller than normal; microscopically, a well marked inter-tubular fibrosis. *Spleen*.—Macroscopically, small, fibrosed and dense, weight 95 gm.; microscopically, enormous thickening of the trabeculae was seen at the expense of the normal splenic pulp. *Liver*.—Macroscopically, very dense, small, 1,085 gm. in weight; microscopically, there was a considerable increase in fibrous tissue, interlobular, and a thickening around vessels and ducts. *Kidneys*.—Macroscopically, very dense, but normal in size, weights, 143 and 152 gm. respectively; microscopically, a very severe degree of fibrosis occurring intratubular was evident, associated with intense congestion. *Brain*.—Macroscopically, firm, large and of complex pattern, its weight being 1,667 gm., the gyri were very large and the sulci deep; microscopically, the same areas were examined as in Case No. 1, and the findings were much the same, the main features being the generalized congestion, and the exhaustion changes found in the large motor or Betz cells.

Case No. 3. P.G.—*Adrenals*.—Macroscopically, dense; microscopically, there was a marked infiltration of fibrous tissue between the various columns of cells, together with an increase of fibrous stroma of the capsules. The cells of the organ appeared healthy, staining reactions being normal. *Testis*.—Macroscopically, no gross lesion was detected; microscopically, there was a great increase of fibrous tissue running between the seminiferous tubules giving the appearance of wide separation, and a similar increase of fibrous tissue was evident in the epididymis. *Spleen*.—Macroscopically, dense and small, weight 65 gm.; microscopically, there was an enormous increase of the trabeculae, the fibrosing process, it would appear, being carried out to an extreme degree. By way of comparison it might be stated here that in one microscopic field the number of trabeculae seen was nine, as against the usual one or two seen in the normal spleen; the amount of splenic pulp was greatly reduced. *Liver*.—Macroscopically, congested and dense, weight 1,255 gm. Microscopically, the severe congestion was confirmed by the presence of large amounts of blood pigment interspersed amongst the hepatic cells. The fibrous tissue surrounding the ducts and vessels was greatly increased. *Kidneys*.—Weights, 148 and 155 gm. respectively, dense and fibrous. Microscopically, many areas of intense congestion were observed to such an extent as to give rise to an appearance of local constriction caused by the contracting fibrous tissue surrounding and invading islands of renal tubules. This microscopical section which exhibits the process of fibrosis carried to extreme degree has no counterpart in any other pathological condition of the kidney known to the authors. *Brain*.—Macroscopically, weight 1,567 gm., a large brain with a convolutional pattern above the average; microscopically, there were no features calling for special mention, beyond those of exhaustion effects of the large motor cells, together with a generalized congestion.

Although a description of three cases only has been given, it is considered advisable to state that our observations and conclusions are founded on a large series of similar cases examined over a period of several years. Considerable research has been carried out in the past on the histopathology of the brain in dementia praecox, and while we recognize that the present status of the brain histology is much the same as it was in

Alzheimer's day, we must express our surprise that very little attention has seemingly been paid to the histopathological state of the general bodily organs in this disease. It is our object to direct the attention to and, if possible, to awake the interest of students of psychiatry in the profound changes found in the organs ; and with this end in view, we have made an intensive and thorough study of the histopathological appearances of these organs in a large series of cases of dementia praecox. However, before formulating our observations on this side of the subject, we feel that some reference should be made to what we imagine is a fair statement of the histopathological condition of the brain in patients dying from acute dementia praecox.

We believe that acute dementia praecox has no specific histopathology in the brain and that this disease cannot be diagnosed microscopically, such as can, for instance, dementia paralytica.

Investigators in the past have described numerous pathological features and have attempted to assign some degree of specificity to them. Thus Alzheimer regarded the presence of amoeboid neuroglial cells as of great importance. Orton² found considerable increase of lipoid material in the ganglion cells in the deeper cortical layers, and demonstrated amoeboid glial cells. Further the glia nuclei proliferation known as Satellitosis has been adduced as a characteristic feature of this disease.

While we admit that the above features have been observed by us from time to time in our examination of the brains of dementia praecox patients, we cannot consider them as in any way pathognomonic of dementia praecox, since it has been our experience to have observed the same features in conditions other than dementia praecox. Thus Satellitosis is readily demonstrable in any condition of the brain where there has been some focus of irritation, such as for instance, in chronic encephalitis or cerebral softenings. Lipoid material in the ganglion cells has been observed by us in cases of general paralysis, and encephalitis lethargica.

In our experience, if there is any one feature that can be claimed as constant and typical of this condition, it is the appearance of the large Betz cells. Admittedly these cells exhibit the usual exhaustion changes ; but, in addition, the nucleus has a characteristic appearance in that it presents a faint outline only, causing the nucleolus by contrast to assume a striking prominence. It is conceivable that this faintly-staining appearance of the nucleus is part of the general exhaustion effect seen so classically in the loss of the stainable substance of the Nissl bodies. In the event of the patient's recovery the nucleus would, we imagine, regain its normal condition. We have no wish to stress this feature but merely mention it in passing, as a matter of interest.

We cannot do better than conclude our reference to this branch of the histopathology by expressing agreement with Dunlap's contention that there is no evidence to regard any particular histological findings as typical or pathognomonic of dementia praecox. We, like Hassin³, are forced to the conclusion that the essence of dementia praecox lies not so much in primary brain change as in some severe chemical metabolic disturbance which may account for both the clinical and histological changes.

Inconstant and atypical as are the histopathological appearances of the brain in dementia praecox, it is our experience that the microscopical features of the bodily viscera in this disease are strikingly constant and characteristic. It is therefore the main object of this paper to lay emphasis upon these special features with a view to securing recognition of them as the usual histopathology of this mental disease.

Much has already been said both in this article and its predecessor about the intense, and in many cases extreme, fibrosis which besets the bodily organs in this disease and how this fibrosis in the organs is readily demonstrated macroscopically by their toughness to the feel and resistance to the passage of the knife in section.

This present investigation of the histopathological appearances of the organs has amply confirmed what has been observed by the naked eye for a long time. On reading the foregoing detailed account of the histopathology of the three selected cases, the reader will probably have been struck by the heavy incidence of the fibrosis in two organs in particular.

In all cases, almost without exception this process of fibrosis has been seen to a marked degree and with regular constancy in the kidney first, and then the spleen, secondly. Other organs have all participated in this morbid change, but generally the pathological changes have been found to be much less constant and severe than in the case of the two organs, kidney and spleen. In some instances it has been found that pathological fibrous tissue has invaded the thyroid gland, for example, with consequent reduction of the normal glandular substance, whilst in other cases this gland may have almost entirely escaped the devastating and strangling effects of this process. We are not convinced from our observation that the endocrine glands and genital organs, ovaries and testes are particularly singled out for extreme treatment in this condition. They do, undoubtedly, manifest a state of fibrosis which, however, varies within very wide limits in different cases. But so regular and severe is the fibrosis in the kidney and spleen that it is difficult to resist the conclusion that the efficient functioning of these organs must be greatly interfered with, if not almost completely deranged, and yet, in life, clinical signs and symptoms strictly referable to these organs are not particularly conspicuous. Another failure to correlate clinical features with subsequent pathological findings must therefore with regret be recorded.

It has been mentioned that one of the salient features of the morbid anatomy of this condition is the infantile state of the cardio-vascular system. The histology of the heart has been examined with a view to determining whether this organ has also been involved in the general fibrosis. In very few instances only has there been evidence of any invasion or replacement of the cardiac muscle by pathological fibrous tissue. It must therefore be inferred that the characteristic smallness of this organ is due to under-development rather than to regression.

We cannot consider our task completed before reminding our readers that, although the cases here dealt with have been carefully selected as cases of acute or malignant dementia praecox, we have taken the opportunities afforded by this investigation of comparing the findings in these special cases with those from examples of the usual chronic form of dementia praecox. After making due allowance for the fact that the pathology of the chronic form of dementia praecox is often coloured or modified by that of the morbid physical condition causing death, e.g., tuberculosis, the condition of the bodily organs is almost identical with that found in the acute types. In a word the condition of fibrosis of the bodily organs is common to all forms of dementia praecox.

In conclusion the results of this investigation may be summarized:—

1. That there is no characteristic histopathology of the brain in dementia praecox.

2. That the most constant feature of the disease is a condition of fibrosis affecting the solid viscera demonstrable both macro- and microscopically.

3. That of all the organs the kidney firstly and spleen secondly bear the brunt of the fibrosis, and that these two organs invariably show the effects of this process microscopically.

4. That the other organs are affected to a lesser extent and tend to exhibit individual variation, but in our experience, the usual order of involvement is thus:—Liver, adrenal, testes or ovary, thyroid, pancreas, pituitary, pineal gland.

This investigation has been conducted with the consent of Dr. E. F. Reeve, to whom it is a pleasure to extend our thanks for his interest shown and helpful advice given.

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VIII.—FROM THE LANCASHIRE COUNTY MENTAL HOSPITAL, WHITTINGHAM, PRESTON.

Report of Clinical and Pathological Investigations.—Communicated by Dr. A. R. GRANT, Medical Superintendent.

A.—*Routine Work in the Laboratory.*

The following is a summary of work carried out in 1931 :—

Urines examined, 3,236 ; bacteriological examinations : faeces, 429 ; urines, 31 ; sputa, 147 ; agglutination reactions, 661 ; examinations of c.s.f., 526 ; biochemical examinations : c.s.f., 526 ; blood, 132 ; examinations of gastric contents, 40 ; auto-genous vaccines made, 9 ; liver function tests (Van-den-Bergh) (Fouchets), 10 ; Meinicke reaction for syphilis : blood, 594 ; c.s.f., 165 ; blood films examined : malaria, 2,496 ; not malaria, 34 ; blood counts, 4 ; miscellaneous, pus, swabs, etc., 85 ; throat swabs examined, 66 ; pathological specimens cut and stained, 300 ; photographs, lantern slides, etc., 540 ; post-mortem examinations, 104.

B.—*After Results of Malarial Therapy in G.P.I.*—By Dr. B. REID, D.P.M.

During the last year an investigation has been made in order to study carefully the after history of patients treated by malarial inoculation for general paralysis since the introduction of this method into this country at Whittingham County Mental Hospital in July, 1922.

It has been agreed for some time that Wagner-Jauregg's method of treatment does prove beneficial, but much of the work reported has been handicapped by too close a review, too near a vision. From the findings of the present investigation it is desired to show the actual clinical results some years after treatment. From 1922 to 1930 a total of 230 patients comes under consideration, all clinically diagnosed as suffering from general paralysis, and all with laboratory findings supporting this diagnosis.

A great deal of the interest naturally centres round the patients sent home, and for the purpose of this study visits have been made to each patient discharged from hospital since 1922, and still living at home. Out of the 230 cases treated six have been unable to be traced. Visits have been made to 17 of the large towns of Lancashire and also journeys have had to be undertaken to Westmorland and Yorkshire.

The following results are at present being worked out :—

1. Percentage of patients suffering from general paralysis treated with malaria, sent home each year.
2. Percentage of patients still recovered and living at home six to nine years after treatment.
3. Percentage of patients still recovered and living at home one to five years after treatment.
4. Expectation of life from one to nine years after treatment.
5. Percentage of cases treated dying within one month of inoculation.
6. Factors influencing prognosis.
7. Changes in cerebro-spinal fluid.
8. Advantages or disadvantages of reinoculation.
9. Effect of malarial treatment on the physical signs present in the nervous system in general paralysis.

C.—*Blood Sugar Determinations by a Micro-Technique of the Folin-Wu Method in a series of 110 cases.*—By Dr. N. McDIARMID.

By checking this method against the macro method it was found that the average error was so small as to be negligible. The method has

certain obvious advantages, for blood can be obtained from any patient without distress or difficulty and as often as required—a most important point in blood sugar tests.

D.—*Epilepsy and the Ketogenic Diet.*—By Dr. S. M. ALLAN, D.P.M.

For a period of eight months 20 epileptics (female) were put on a ketogenic diet. None of the patients were specially selected, and all classes of epileptics were included. It was found to be extremely difficult to confine the patients to the restricted diet, but a check was kept by regular bi-weekly examinations of the urine. (The urine of those on a high fat diet contains acetone bodies.) At the end of the period stated five patients had benefited considerably as regards the number of convulsions, one patient having her fits reduced from ten per month to two. Five patients were improved mentally. This improvement occurred mainly in the violent type of patient. Two in this latter group also figured in the former class of those having the fits greatly reduced.

On the whole the results so far are disappointing, since no single patient recovered sufficiently to hold hopes of her discharge. The diet is tedious, expensive, and in bulk, quite inadequate. Although the patients continually complained of being hungry, none of them lost weight and those able to work continued at their duties.

The diet is still being persevered with in a small number of patients.

E.—*Investigations of the Effects of Iodine in the Prevention of Influenza and Epidemic Diseases.*—By Dr. DAVID PRENTICE.

This investigation was proceeded with in one division containing 534 patients. Those whose surname began with the initial C, F, H, M, S and W, numbering 263 in all, were given $\frac{1}{10}$ gr. iodine weekly in the form of a chocolate tablet; the remaining 271 patients receiving no iodine.

Our findings as the result of the complete experiment is that there was slightly less illness, more especially of the common cold type, among those patients receiving iodine, than in those who did not do so. It is difficult to form a conclusion as to whether the iodine alone was responsible for this, but it is possible that by its tonic effect on the general metabolism it has a certain influence in increasing resistance to diseases of this class.

F.—*Flocculation Tests in Cerebro-spinal Fluid.*—By Dr. DAVID PRENTICE.

A slight modification of Unterstemer's method of applying the Meinicke Turbidity Reaction to cerebro-spinal fluids was used in the examination of these fluids in the earlier part of the year. In 238 of the specimens a confirmatory Wassermann report was obtained from the University of Manchester, and the percentage agreement in the results of the two tests was high. Later the new M.K.R. extract was substituted for the M.T.R. when examining the cerebro-spinal fluid. The advantage offered by the new method is that no hanging drop preparation is required, the test being suitable for use as a macro reaction. The technique is exceedingly simple and the percentage agreement with the Wassermann reaction has been surprisingly high.

In addition to these methods of examining the c.s.f., a Lange gold sol test and a colloidal gamboge test were performed on each specimen. The physical examination generally included a report on the colour, reaction, pressure and sediment. Among the other tests performed if required were the Ross Jones, Pandey, Acetic Anhydride and Braun Husler and an estimation of chlorides and sugar. The microscopical examination included a quantitative and qualitative examination of the cells, and where necessary a bacteriological examination was performed by means of film and cultivation. Towards the end of the year a few specimens were submitted to the Takata Ara test. Altogether, 526 cerebro-spinal fluids were examined during 1931.

G.—*Actinotherapy*.—By Dr. C. JAMIESON-CRAIG.

During the year 1931 there have been 3,982 attendances at the Ultra-violet Light Department of this hospital, and 311 patients, including staff, have been treated, 240 male patients, 194 female, 20 male staff and 57 female staff. Since the opening of the department on October 23rd, 1928, the total number of attendances has been 8,401. The aim has been to improve the physical state as well as the mental state, if possible, by general irradiations, and also to attack local lesions where these have existed. Patients have been sent from the acute and chronic divisions of the hospital, and of these the recent female admissions have shown the more marked improvement, and many have been discharged. All patients have been carefully weighed and the majority have gained weight. Of the physical conditions, post influenzal, post pneumonic, and general debility, tubercular and rheumatic joints, various diseases of skin and scalp, sciatica, boils and carbuncles have been treated. Of the mental states, epilepsy with insanity has been treated, but in many treatment has had to be discontinued on account of an increase in the number of fits. Manic-depressive cases have improved mentally, while in cases of delusional insanity a change of temperament has been noted, the patients becoming less irritable and the delusions from which they suffered at the beginning of treatment being seldom if ever referred to at a later period. Cases of dementia praecox have shown no improvement. On the whole, however, patients have become physically fitter and brighter mentally, and if not completely restored, they at least in many cases have become more tractable.

H.—*Publications*.

1. *The Value of Routine Examination of the Cerebro-Spinal Fluid: Report on the Examination of 3,200 Fluids.* By N. McDIARMID.—*Journal of Neurology and Psychopathology.* January 1931.

The fluids examined and analysed were from a wide variety of diseases including general paresis, juvenile and acquired, tabes dorsalis, cerebro-spinal syphilis, cerebral tumour, cerebral abscess, acute meningitis, tubercular meningitis, post encephalitis lethargica, disseminated sclerosis, Huntington's chorea, pellagra, peripheral neuritis, Von Recklinghausen's disease, etc.

Five hundred fluids examined were from cases of general paresis before treatment by malaria or tryparsamide. The most common change in the fluid after malarial therapy was a decrease in the cell count, and in only three cases was the fluid unaltered after treatment.

The differential diagnosis of general paresis, tabes dorsalis and cerebro-spinal syphilis by means of the cerebro-spinal fluid was also discussed, and also the value of such an examination as an aid to diagnosis in other diseases.

2. *The Meinicke Clarification Reaction.* By Dr. D. PRENTICE.—*British Medical Journal.*—January 24th, 1931.

IX.—FROM THE LANCASHIRE COUNTY MENTAL HOSPITAL, WINWICK, WARRINGTON.

Report of Clinical and Pathological Investigations.—Communicated by Dr. F. M. RODGERS, O.B.E., Medical Superintendent.

A.—*Laboratory Work*.

(1) *Routine Work.*—Photographs, 541; post-mortems, 64; histological: material, 31; slides, 150; urines: general, 4,514; microscopic, 1,017; stomach contents, 12; blood: differential counts, 5; for malaria, 350; Sachs-Georgi, 304; sent away for

Wassermann (Manchester), 157 ; c.s.f. : cell count, 180 ; globulin, 202 ; Boltz, 204 ; Hopkins-Cole, 140 ; protein estimation, 145 ; colloidal gold, 204 ; Sachs-Georgi, 231 ; sent away for Wassermann, 145 ; other fluids, 2 ; bacteriological : vaginal smears, 5 ; pus, 42 ; throat swabs, 22 ; sputum, 120 ; faeces—for typhoid and dysentery, 254 ; for T.B., 109 ; urines, 8 ; preparation of vaccines, 8 ; total cultures, 428 ; milk examinations (fats, etc.), 12.

(2) *Additional Tests* (Research by Medical Officers) :—

Test.		Blood.	C.S.F.	Total.
Micro-M.K.R.	... ..	1,864	140	2,004
Macro-M.K.R.	... ..	144	89	233
Sachs-Witebsky	... ..	157	146	303
Total	... ..	2,165	375	2,540

B.—*Malarial Therapy in General Paralysis.*—By Dr. J. GIFFORD, D.P.M., Deputy Medical Superintendent.

Only 21 patients with general paralysis were admitted during 1931, and it is again necessary to note among these the large proportion of very advanced cases, and the almost complete absence of truly early ones. It appears probable that this is due firstly to the shortage of admission beds for acute cases resulting in the sending forward of those patients most dependent upon nursing and bed care rather than the earlier types ; and secondly to the fact that various external hospitals are themselves now utilizing this therapy.

Blood for inoculation was supplied to Edinburgh, Dublin, Middlesbrough and Salford V.D. Clinic ; a number of requests could not be complied with owing to lapse of strain. Owing to the few cases suitable for this therapy, there has been increasing difficulty in maintaining continuity and the malarial strain has perforce been allowed to die out on various occasions.

All the cases classed as too late to benefit by malarial therapy died within the year. Of the new admissions, twelve patients were alone suitable and were treated by first inoculation and one by secondary ; and of previous cases two by first inoculation, and three by secondary (of which two did not develop). Although the tertian type was used and introduced by new mosquito strain, the proportion of patients acquiring daily rigors has been high. In consequence of the difficulties, stated results cannot be usefully analyzed for comparison with earlier years. Adjuvant therapies are combined with malaria in all cases.

C.—*The Meinicke (M.K.R.) Reaction.*—By Dr. J. ERNEST NICOLE, D.P.M.

Early in the year it was decided to try the M.K.R. reaction, principally in its micro form, on a series of cases of both sexes. So far (end of 1931), the test has been performed on 895 males and 628 females. On 227 cases the test was repeated, sometimes on several occasions, and the total number of tests done was 1,864.

The test has proved most satisfactory, and quite apart from such points as the ease of technique, the little time required, and the large number of sera that can be tested at one sitting, the test has the invaluable advantage that only a drop of blood is required, such as can be obtained from a pin-prick. This means that all the collecting of blood can be left with perfect safety in the hands of the nursing staff, and is an easy matter even in mildly difficult cases. No untoward incidents are to be expected, and none have occurred (unless we include 3 patients who nearly fainted at the sight of a drop of their own blood).

The test has also been tried on 140 cerebro-spinal fluids, though with less reliable results than on blood.

The *macro-M.K.R.* was also used as a confirmatory test on 144 sera and 89 fluids, and was found very reliable. Other tests were also done in these cases (see next section).

It is hoped shortly to publish detailed results, with special reference to :—

(1) Certain points of technique, such as the effect on the micro-test of dilution of the serum and of delayed readings, and the standard of reading the macro-test (complete versus nearly complete clarification). Also the "one tube" method.

(2) The results obtained with tuberculous cases and the presence or absence of false positives.

(3) The value of the test in cerebro-spinal fluid.

It is also expected that the age incidence of positive results may yield interesting material in the two sexes. It would appear that both (a) including, and (b) excluding cases of general paralysis there is a drop in the percentage of positives found in males after the age of 50, whereas there is no such drop (or at least not of the same magnitude) in females. The possible explanation of this may form the subject of a future communication.

Newer methods have recently been devised by Dr. Meinicke and collectively termed the *M.K.R. II.* Details of these have been obtained from him and we hope to put them into practice very shortly.

I am greatly indebted to Dr. E. J. Fitzgerald for performing some of the earlier macro-tests and for procuring the fluids and many of the sera for that test.

D.—*The Sero-Diagnosis of Syphilis.* (Accepted for *Journal of Mental Science*, January, 1932.) A paper read at a Divisional Meeting of the Royal Medico Psychological Association, October, 1931.—By Dr. J. ERNEST NICOLE and Dr. E. J. FITZGERALD.

It has long been felt that the Wassermann reaction is not always sensitive enough in treated cases, and as most of the syphilitic patients admitted to mental hospitals (but not suffering from general paralysis) have been treated elsewhere before admission, the question of finding more efficient tests as substitutes for the Wassermann is becoming increasingly important. There is also the fact that the Wassermann is too complicated for most mental hospitals, and that few institutions have sufficient material for the necessary continuity of practice to be maintained.

The test which had hitherto been employed as a routine here was the Sachs-Georgi, done with the antigen supplied by Burroughs Wellcome and by the modified technique recommended by them. For some time past it had been felt that not only was this test deficient in sensitivity and perhaps specificity too, but that it gave too high a proportion of uncertain or "doubtful" reactions to be really reliable. And so it was decided to try a number of cases with the original Sachs-Georgi, performed with the German antigen obtained directly from Heidelberg. At the same time, the micro-M.K.R., the macro-M.K.R. and the Sachs-Witebsky (citochol) reactions were introduced, while control Wassermans were done for us at the Manchester University Public Health Laboratory.

If we have selected these particular tests in preference to other at least equally promising ones, such as the Kahn, the Kline-Young, the Hinton, it was because it was not possible to inflict the performance of all these tests on a laboratory staff that was more than fully employed coping with routine work, and as these tests had to be done by us personally, simplicity and speed of technique became of some moment, as it must be also in many other mental hospital laboratories in the country.

In all, 175 cases were selected for the simultaneous application of tests, the average number of serum being 5.3. The cerebro-spinal fluids of 170 of these cases were also done by these tests (average of 4.5 per fluid) as well as by the usual chemical tests. The series included 53 non-syphilitics,

5 cases of congenital syphilis, 25 systemic cases, 3 cases of meningo-vascular syphilis, 5 of tabes, 26 of general paralysis before malarial treatment, and 58 after malaria. On these 175 cases over 3,000 tests were performed.

Agreement between the various tests was found in 121 cases. In another 18 cases, though no contradictory results were obtained, yet several doubtful reactions occur. But in the remaining 36 cases definite disagreements appear.

The more noteworthy results were as follows :—

(a) The micro-M.K.R. (172 cases) and the macro-M.K.R. (140 cases) were only once each wrongly negative.

(b) The Sachs-Witebsky (157 cases) was never wrongly positive, but was not as sensitive as the Wassermann.

(c) The Burroughs Wellcome Sachs-Georgi (out of 171 cases) gave 3 wrong positives, 18 wrong negatives and 15 "doubtfuls".

(d) The Wassermann (157 cases) gave no wrong positives, but 13 wrong negatives and 9 "doubtfuls."

(e) The macro-M.K.R. and the Sachs-Witebsky gave least "doubtfuls."

(f) On cerebro-spinal fluids, the micro-M.K.R. (140 cases) was not satisfactory, the Macro-M.K.R. (89 cases) was very reliable, the Sachs-Witebsky (146 cases) gave very satisfactory results, but the Sachs-Georgi (168 cases) gave 15 doubtful results, 2 wrong positives and 12 wrong negatives. The Wassermann (145 cases) gave 10 incorrect negatives.

As it would be somewhat rash to dogmatize from such a limited number of cases, the work will proceed for the next 12 months, with the possible elimination of the original Sachs-Georgi. At the same time, it is hoped to make a start with the Kahn test (routine method and presumptive method) and the Muller test (ordinary method and centrifuge method).

We have been indebted to Drs. Gifford and Aldred for free access to their cases.

E.—*Serologic Results in Malarially-treated General Paralysis.*—By Dr. J. ERNEST NICOLE and Dr. E. J. FITZGERALD.

The results are given of the examination of over 1,200 fluids, of which 500 were from cases of general paralysis. Of these latter, 291 were performed before malarial treatment and 210 after treatment, sometimes as long as seven and eight years after malaria. The observations deal principally with cell-counts, the globulin reactions, the Boltz test, the total protein content and Lange's colloidal gold.

Detailed tables are given comparing with each other (a) Globulin, Boltz and total protein, (b) Globulin, Lange and time elapsed since Malaria.

As illustrative cases, a series of 58 general paralytics under care at the beginning of this year is given in detail, embodying also the results obtained on blood and on cerebro-spinal fluid with such tests as the Wassermann, the Sachs-Georgi, the Sachs-Witebsky and the Meinicke. Particulars are given in these cases of previous cerebro-spinal fluid examinations which in some instances numbered seven per case. The general conclusions were :—

(1) The cerebro-spinal fluid improves after malaria, sometimes becoming completely normal.

(2) Such changes take considerable time to occur, being most marked, on an average, when four or more years have elapsed since the onset of the treatment, the cell-count and the Boltz improving before the Lange.

(3) The serologic improvement bears no relation to the clinical condition.

(4) The improvement does not appear to be related to the number of courses of malaria given.

(5) No single specific syphilitic test is to be relied upon in treated cases without being confirmed by at least one other test.

(6) Even these specific tests may, and do, become negative in absence of intensive antisyphilitic treatment (apart from malaria).

It should be borne in mind that the fluid after malaria may show complete normality, notwithstanding the occurrence of a mental relapse.

(*American Journal of Syphilis*, October, 1931.)

F.—*Further Results with the Boltz Acetic-Anhydride Test*.—By Dr. J. ERNEST NICOLE and Dr. E. J. FITZGERALD.

In view of the increasing adoption of the Boltz test in mental hospitals, results are published based upon the use of this test in 890 cases, of which 356 were general paralytics. Of these latter, 176 were examined before treatment and 180 after.

Detailed comparisons between the Boltz, Globulin, total protein and Lange are given. The chemistry of the test is discussed and points in technique considered, the following conclusions being reached:—

(1) The Boltz test is rarely positive in non-paretic cases except in certain cases of meningeal involvement, such as are but infrequently found in mental hospital work.

(2) It is not invariably positive in general paralysis, and a negative Boltz is of little diagnostic value.

(3) It agrees with no other usual test, though it probably disagrees less with the Lange than with, say, the globulin reactions.

(4) It readily becomes negative after malarial treatment, but mostly so after some years have elapsed since the first attack of malaria.

(5) The test does not depend on the globulin content of the cerebro-spinal fluid, nor on the total protein increase, nor the protein partition, though it probably does bear a relationship to the total tryptophane value of the fluid proteins, with perhaps also cholesterol as a subsidiary factor.

(6) If the test is to be further investigated—and we think it should—it would be much preferable to use it in its Hopkins-Cole form, because (a) the Hopkins-Cole reagent can be standardized, (b) the colour reactions can be so graded as to render them roughly quantitative, and (c) there is not the brown charring so often found when using acetic anhydride.

(*Journal of Mental Science*, April, 1931.)

G.—*The Treatment of Syphilis*.—By Dr. E. J. FITZGERALD.

The results of the investigations reported above have incidentally shown how persistently positive some old-standing cases may remain, in spite of malaria (in general paralytics) and of routine antisyphilitic measures. An investigation into the comparative values of different drugs in both male and female cases has been begun. The drugs under study are neo-salvarsan, tryparsamide, stovarsol and its sodium salt, bismostab and bivitol.

Attention will also be paid to diet in accordance with Mellanby's views concerning the deficiency of vitamin-A in degenerations of the spinal cord and its possible liberation from the liver under the influence of malaria (*Brain*, September, 1931.) The claims of the method suggested by Rajka and Radani (*Au. el. Derm. et Syph.*, Sept., 1931) of injecting blood from syphilitic cases after exposure to ultra-violet light will also be investigated.

H.—*A Case of Pancreatic Carcinoma*.—By Dr. E. J. FITZGERALD.

W.R., a male patient, aged 53, who had twice previously been admitted to a mental hospital. Admitted here in 1924, suffering from paranoid form of dementia praecox. No history of bodily disease prior to admission. On admission was found to have valvular (mitral) heart disease. Physical health fair during the whole of his stay here until May 8th, 1931, when he was transferred to an infirmary ward for eczema, some pain in the chest

and a temperature of 100° F. During the past month or two he had lost a few pounds in weight. The pyrexia only lasted two days, and he was soon up and about again.

On June 1st, he did not appear well, he was put to bed, and he showed definite signs of bronchitis. On June 16th, there were found some enlarged glands in the left supraclavicular region. The liver was slightly enlarged, and the gall-bladder was palpable, with some tenderness. There was some difficulty in passing urine; catheterization revealed a slight obstruction in the prostatic urethra. Rectal examination revealed internal and external haemorrhoids, ballooning of the rectum, but no enlargement of the prostate. He was suffering from constipation. Urine; S.G.1012. Acid. No albumen or sugar, but trace of bile. Sputum and faeces: both negative for T.B. Faeces:—normal in colour, not offensive, but a few undigested muscle fibres. Stomach contents:—normal.

Temperature remained normal, there was no marked cachexia, no glycosuria found notwithstanding repeated examinations. At no time were there any attacks of vomiting, abdominal pain or digestive symptoms beyond a slight anorexia.

On June 19th, there was a slight jaundice, but the faeces remained normal in colour. Patient died on June 22nd.

Post-mortem Examination.—The heart showed mitral incompetence, with brown atrophy. Marked arterio-sclerosis. Left supra-clavicular glands were enlarged. Haemorrhoids. Lungs showed atrophic emphysema. Pleurae not adherent. Examination of the whole length of the alimentary tract revealed no particular abnormality. Liver enlarged (87 ozs.), smooth, but showed carcinomatous metastases: it was slightly bile-stained. Gall-bladder full and dilated. The pancreas was much enlarged (9 ozs.), with a new growth of the head, the body and tail being unaffected. Neighbouring glands enlarged. The kidneys showed sub-acute parenchymatous nephritis. Prostate not enlarged; no evidence of malignancy. The brain weighed only 42 oz.; no gross pathological changes. Other organs (adrenals, thyroid, etc.) normal.

Microscopic examination showed the growth to be a spheroidal carcinoma, the islets of Langerhans having retained a normal appearance.

The case is of interest as illustrating the insidiousness of onset of pancreatic carcinoma, with the additional feature that jaundice—often described as the principal symptom—only occurred three days before death and was not by any means intense.

X.—FROM THE LONDON COUNTY MENTAL HOSPITAL, BANSTEAD.

General Report.—By Dr. A. A. W. PETRIE, F.R.C.S., D.P.M., Medical Superintendent.

Routine Laboratory Work.

The following routine examinations have been conducted at this hospital during the year 1931:—

Urine tests, 3,721; bacteriological examinations of faeces, 507; blood: agglutination tests, 823; cultures, 14; counts, 42; sputum, etc., tests of tubercle, 158; throat swabs, etc., 10; histological reports (Maudsley), 60; blood Wasserman (Maudsley), 396; c.s.f. tests (Maudsley), 142; post-mortems, 102 (70 per cent. of deaths).

In addition, malarial films in the control of the patients inoculated with malaria have been regularly taken.

Research.

Further work in regard to the effect of protein shock (milk injection) on the renal metabolism has been carried out in conjunction with the Maudsley Central Laboratory.

Brain feeding experiments, as suggested by Haberlondt, are being carried out. It is too early to speak as to results, but two anergic melancholics have shown some improvement. Half a pig's raw brain has been administered daily for three weeks, and after intermissions has been re-continued. Mashing into a paste with flavouring assists in making the material palatable.

XI.—FROM THE LONDON COUNTY MENTAL HOSPITAL, BEXLEY.

Report on Laboratory Work.—By Dr. G. CLARKE, Medical Superintendent.

The following is a general summary of laboratory work carried out during the year 1931 :—

Urine : general examinations, 288 ; microscopic, 39 ; sugar estimations, 4. (These are in addition to the usual routine examinations made in the wards.) Blood : malarial, 96 ; differential counts, 27 ; estimation of urea, 3 ; estimation of sugar, 1. Bacteriological examinations : sputa, 213 ; faeces, 39 ; swabs, 16 ; other pathological fluids, 15 ; cultures made, 49 ; microscopic sections of pathological tissues, 104.

XII.—FROM THE LONDON COUNTY MENTAL HOSPITAL, CANE HILL.

Report of Clinical and Pathological Investigations.—Communicated by Dr. G. A. LILLY, M.C., D.P.M., Medical Superintendent.

A.—Routine Laboratory Work.

A summary of routine laboratory work carried out during the year is given hereunder :—

Urine examinations : general, 775 ; special, 246 ; stools examinations for : typhoid and dysentery group, 205 ; for blood, 12 ; blood : malarial films, 54 ; sugar estimations 3 ; agglutinations, 14 ; counts, 4 ; pus : microscopic examinations, 10 ; throat swabs : cultures and examinations, 14 ; sputum : examinations, 45 ; post-mortem examinations, 97.

B.—Observations upon abnormalities of the Pupils and Iris in *Tabes Dorsalis*, *General Paralysis* and *Tabo-Paresis* : with a consideration of their bearing upon the Pathogenesis of the *Argyll-Robertson Pupil*. By Dr. W. M. McGRATH, D.P.M.

(1) The pupillary phenomenon originally described by Argyll-Robertson is a complex one, and consists invariably of the following components when it is fully developed—loss of the direct and consensual response to light, retention (not invariably of normal degree) of the response to convergence, trophic changes in the texture and colour of the iris, and abnormalities in the dimensions (miosis) and in the form of the pupil. No one of these components is more constant than another and no one of them is separable from the rest.

(2) This, the true Argyll-Robertson pupil, is invariably associated with neuro-syphilis and is never found apart from this.

(3) The Argyll-Robertson phenomenon commonly develops segmentally, becoming uniform only when fully developed. It is to this segmental development of iris changes that segmental loss of light reaction and pupil irregularity are due.

(4) This mode of development indicates that the underlying nervous lesion must be in the peripheral neurone. The observations recorded here are not compatible with a central lesion in the mid-brain.

(5) The so-called Argyll-Robertson pupil of non-syphilitic lesions of the nervous system is clinically distinguishable from the true Argyll-Robertson pupil. It is accompanied by pupil dilatation, and characterized by an absence of miosis, pupil irregularity or trophic changes in the iris. Theories as to its pathogenesis have no bearing upon the problems presented by the true Argyll-Robertson pupil.

C.—*Publication.*

Mental Nursing Simplified.—By O. P. NAPIER PEARN, M.R.C.S., L.R.C.P., D.P.M., Deputy Medical Superintendent, Cane Hill Mental Hospital.

A text book for nurses presenting the necessary subjects in an easily assimilable form.

XIII.—FROM THE LONDON COUNTY MENTAL HOSPITAL, CLAYBURY.

A.—*General Report.*—By G. F. BARHAM, Medical Superintendent.

Routine Laboratory Work.—The number of specimens examined in the pathological laboratory amounted to 8,530, and consisted of the following routine examinations :—

Urine, routine and special, 3,836 ; faeces, 2,681 ; blood : sugar, 989 ; films, 592 ; urea, 38 ; counts and haemoglobin, 125 ; cultures, 18 ; sputa, 117 ; pus, etc., 53 ; Widal agglutination tests, 39 ; throat swabs, 17 ; milking apparatus, 25.

The increase in the number of blood sugar curves is the result of an investigation in progress inspired by recent and suggestive work on the diagnostic and prognostic importance of this test in certain cases.

General Paralysis.—The treatment of general paralysis by induced pyrexia continues to be carried out in both male and female patients, and during the year 1931 there was a considerable rise in the number of general paralytics, 47 cases being admitted. Thirteen deaths occurred and there were 13 patients discharged in a state of good remission. The question of applying induced pyrexia and the method employed for this purpose is decided in each individual case with special consideration for fitness and duration of disease. According to the indications of the case, the method of treatment applied is either by inoculation with malarial blood or by injections of sulphur. As regards the latter, an aqueous preparation is now exclusively used and experience here supports the view that it is more effective in evoking pyrexia, and the preparation is more easily manipulated. Both the original oily preparation of sulphur and colloidal sulphur have been tried with uncertain reaction and very indifferent results. The aqueous solution has given a far more constant and higher pyrexia.

Dr. R. G. B. Marsh continued his research into the excitability of the respiratory centre and the respiratory response to CO₂ in conjunction with the Maudsley Pathological Laboratory, until his transfer to Leavesden Mental Hospital in September.

B.—*Treatments of Schizophrenia.*—By Dr. G. DE M. RUDOLF, M.R.C.P., D.P.M., Medical Superintendent of Brentry Colony, Bristol.

A series of 23 treatments of Schizophrenia was discussed and their relative values compared. Three series of untreated cases were used as controls. The treatments could be divided into two groups shown as follows :—

(a) Psychological.—The rationale of psycho-analysis is too well known to be described here. Occupational therapy also comes under this heading.

(b) Physical.—The physical methods of treatment described above may be grouped as follows :—

1. Pyrexial or shock methods : including malaria, aseptic meningitis, sodium nucleinate, sodium nucleinate with arsenious acid and ketol, sulfosin, typhoid-paratyphoid vaccine, and haemotherapy.

2. Vitamins :

(a) C.

(b) D—in the form of ultra-violet ray irradiation, radiostol, radiostol with liver extract, and irradiated milk.

(c) Connected with vitamin D—Calcium, calcium with lecithin, and calcium with parathormone.

3. Antisepsis: including operative treatment, irrigation of colon, ultra-violet ray radiation, manganese chloride, Ringer-Locke solution, and malaria.

4. Endocrine treatment: including ovarian transplantation, thyroid extract, thyroid with pituitary extract, and parathormone with calcium.

5. Sedative treatment: including somnifen.

6. Specific treatment: including thyroid extract and salvarsan.

7. Salicylates.

8. Respiratory treatments: including assisted respiration.

Of the treatments which produced a greater improvement rate than occurred in the control series, a common effect was found. This effect was the relation between the corpuscular sodium bicarbonate and the corpuscular chloride. Some of the successful treatments increased the sodium bicarbonate, others decreased the corpuscular chloride.

As the majority of the treatments were carried out on comparatively small series of cases by the authors reporting them, they can be regarded only as experimental.

It is hoped that the treatments that appear successful will be tested on a large number of cases by those who have the opportunities to do so.

(Cases to whom reference is made in the above were treated by the author at Claybury Mental Hospital.)

("Experimental Treatments of Schizophrenia."—*Journal of Mental Science*, October, 1931.)

XIV.—FROM THE LONDON COUNTY MENTAL HOSPITAL, COLNEY HATCH.

General Report.—By Dr. JOHN BRANDER, D.P.M., Medical Superintendent.

Routine Laboratory Work.

The usual routine investigations of urine, sputum, blood and excreta have been carried out as occasion arose.

Investigations on Epilepsy.—By Dr. ISAAC FROST, D.P.M.

For periods of several weeks, daily readings of blood pressure and haemoglobin percentages of the blood were made upon 25 epileptics. Marked fluctuations were found in a number of the cases. When plotted in a graph form these fluctuations were found to be of two types—(1) a number of cases showed that blood pressure varied inversely with the haemoglobin readings, (2) a smaller number showed direct and corresponding fluctuation with these readings. In all, some 2,000 observations were carried out. They suggest that further investigation upon blood-volume changes in epileptics may provide instructive results.

The urinary output and resting blood sugar of 100 cases of epilepsy were also measured.

Histological Studies of the Alimentary Tract in Psychoses.—By Dr. ALEXANDER CANNON, D.P.M.

Dr. Cannon has carried out microscopic examinations of various regions of the alimentary tract obtained at autopsies of subjects who had suffered from a variety of psychoses. The intention is to compare results with those recorded by foreign authors, particularly regarding dementia praecox.

Studies of the Pituitary, Normal and Abnormal.—By Dr. JOHN BRANDER.

These studies, which were commenced at Bexley Mental Hospital some years ago, have been extended and amplified. The anatomical aspects

were summarized in a short paper published in the *Journal of Anatomy*, January, 1932. It appears that the pituitary has vascular connections, previously undescribed, which may prove to have considerable significance in pathology.

XV.—FROM THE LONDON COUNTY MENTAL HOSPITAL, EWELL.

General Report.—By Dr. L. H. WOOTTON, M.C., D.P.M., Medical Superintendent.

Dementia Praecox.—The research work which has been carried out in the laboratory during 1931 is "An Investigation into the Histology of the Digestive Tract in cases of Dementia Praecox in comparison with that of cases of other Forms of Insanity." This work has not yet been completed.

Routine Laboratory Work.—The routine laboratory work for the year is as follows :—

Urine examinations : general and microscopic, 686, cultures, 8 ; bloods : Widal 3, cultures, 1, complete counts, 1 ; c.s.f. (Lange), 2 ; sputums, 34 ; throat swabs, 19 ; faeces, 5 ; microscopic and histological slides, 128 ; other bacteriological examinations, 2.

XVI.—FROM THE LONDON COUNTY MENTAL HOSPITAL, HANWELL.

General Report.—By Dr. A. W. DANIEL, Medical Superintendent.

Pathological Investigations.—In addition to routine examination of urines, special examinations in the pathological laboratory have been :—

Urine examinations (including bacteriological), 608 ; Sachs Georgi reactions, 37 ; malarial blood films, 35 ; various scrapings and smears, 29 ; sections, 18 ; sputum, 37 ; faeces, 41 ; bacterial cultures, 102. Post-mortem examinations numbered 118 (62 per cent.), of these 71 and 47 applied to female and male patients respectively.

Sulfosin and Col-sul.—Injections of these preparations were given to a few selected patients, but the results were disappointing, the pyrexias produced being rarely greater than 103.

General Paralysis.—During this winter the treatment of general paralysis by the induction of malaria has been resumed. Prior to this the following methods of treating general paralysis have been given a trial :—

Injections with bismuth tryparsamide and sulphosin. The results did not compare favourably with those published by treatment with malaria.

XVII.—FROM THE LONDON COUNTY MENTAL HOSPITAL, HORTON.

A.—*General Report.*—By Dr. W. D. NICOL, D.P.M., Medical Superintendent.

Analysis of Pathological Investigations.

Urine examinations : Routine chemical, 4,558, bacteriological, 109 ; sugar estimations and examinations for acetone and diacetic acid, 775, diastase reaction, 28 ; urea concentration, 22 ; stools : complete examination for enterica organisms, B. dysenteriae etc., 186 ; number containing B. typhosus, nil, B. paratyphosus A, nil, B. paratyphosus B, nil ; B. dysenteriae, nil ; 85 examinations for B. tuberculosis (4 contained T.B.) ; 33 for occult blood ; 6 for fat content ; 60 bowel washings for enumeration of organisms before and after treatment ; blood : 54 estimations for sugar content ; 20 agglutinations for enterica group ; enumeration of cells and differential count, 87 ; enumeration of cells for haemoclastic crisis, 22 ; 14 estimations for a urea content, 7 for culture, 6 for calcium content, and 10 for Van-den-Bergh reaction ; pus : 73 examinations for pathogenic

organism; throat swabs and culture for *B. diphtheriae* and other pathogenic organisms, 63; 59 sputum examinations for T.B. and other pathogenic organisms; gastric contents, 10 complete analyses; tissues: 220 histological examinations (including brain and spinal cord); post-mortem examinations were held on 110 patients.

General Paralysis, Malaria Therapy Department.

Since the last report the accommodation at the Malaria Treatment Centre has been increased by 10 beds, and facilities are now available for treating men. Under the new Mental Treatment Act, it is hoped that earlier cases will be treated; already some cases are being admitted as voluntary patients. Four species of malaria have been employed during the year 1931: benign tertian, quartan, malignant tertian and recently a strain of *P. Ovale*. No deaths associated with malaria have occurred during the year. Fifty-four cases (50 F. and 4 M.) have been treated, of whom sixteen have had a second course of treatment. The therapeutic results of malaria therapy in general paralysis are shortly being published in a paper giving a review of the work since 1925. Malaria research in co-operation with Colonel James at the Ministry of Health continues.

Continuous Colonic Irrigation Department (Plombières).—By Dr. G. F. PETERS D.P.M.

Forty-seven cases were treated during the year. Seventeen of these showed some mental and physical improvement. In 29 no appreciable change could be detected, one was decidedly worse mentally after the treatment. Ten cases were still under treatment at the end of the year.

Constipated patients of toxic appearance were generally chosen, and those who still had indican in the urine after routine aperient treatment for a fortnight. The solutions used were potassium permanganate, hydrogen peroxide, bicarbonate of soda and normal saline, and patients attended for three sessions a week until they had had at least six irrigations, most of them had more than that number.

A routine examination of the intestinal flora was made to detect the presence or absence of non-lactose fermenting organisms. As the treatment was being employed in this hospital for the first time, chronic and incurable cases were dealt with as well as those of more favourable prognosis, and the results obtained are not a just measure of the value of the treatment for carefully selected cases.

It was observed that many of the patients disliked the treatment, and it had to be abandoned in a number of cases for that reason. On the other hand it was noticed that drowsiness and desire to rest in a recumbent position frequently supervened after a session of colonic irrigation and this ensured several hours of restfulness and sometimes sleep in those patients who were restless and agitated. There was a general improvement in the appearance of many of the patients, "muddy" complexions taking on a healthier tinge and acne tending to disappear. In a few cases the appetite improved.

X-Ray Department.

This department continues to do radiography for the neighbouring L.C.C. mental hospitals.

The number of successful plates registered during the year was 674, and the total number of cases examined was 453; of these, 396 and 244 respectively related to Horton patients.

Actino-Therapeutic Department (Annual Report for 1931).—Dr. G. F. PETERS, D.P.M., and Dr. MARY E. TYARS, D.P.M.

Mercury Vapour Section.—At the beginning of this year the department was divided into Carbon Arc and Mercury Vapor Lamp sections. The

carbon arc is now being used for general treatments, while the mercury vapour rays are administered for local lesions or in very debilitated cases.

The cases treated number 26 (staff 4, patients 22).

Lesions treated : Cyanosed feet, 8 (5 improved considerably, 2 discontinued on account of gross sepsis, 1 was too resistive) ; scar on head, 1 (no response to treatment) ; indolent ulcers, 6 (4 healed, 2 were too resistive) ; general debility, 2 (1 improved, 1 not so far responded) ; scabies, 5 (3 improved, 2 recurred).

The scabies cases need some comment. They were cases treated with sulphur and which had recurred at least once, generally twice ; the exposures were given in 5 such patients (with all due precautions regarding infectivity) to test the prophylactic properties of light. They were all old patients and the treatments unless interrupted lasted two months. Two cases succumbed to an outbreak of infection in their ward, and three have remained unaffected so far, whilst an unexposed "control" case has relapsed badly. This indicates that some prophylactic effects may possibly be obtained.

The average duration of treatment for all cases was about 1 month, i.e., 16 sessions.

The Tungsten arc lamp in this section has been found to have by far its greatest effect in the cases of ulceration and has therefore only been used for such lesions.

Carbon Arc.—A full course of treatment was completed in the case of 41 patients in the year 1931 and patients who were still undergoing treatment at the end of the year numbered 16.

The scheme of a full course was to give daily sessions for six days a week, continued for 12 successive weeks. The duration of each daily session was about 15 to 20 minutes according to the dosage required. The minimum erythema dose was ascertained in every case ; temperature was charted at the beginning and again at the end of every session ; the weight was recorded every week and the red and white cell count and haemoglobin content were investigated at the beginning and again at the end of the course.

The results of the 41 completed courses showed the following conditions :

Mental and physical improvement, 19 (6 of whom were discharged from hospital) ; mental (but not physical) improvement, 2 ; physical (but not mental) improvement, 8 ; no improvement (mental or physical), 10 ; worse during treatment, 2.

The forms of mental disorder treated comprized : dementia praecox, melancholia, non-systematized delusional insanity, confusional insanity, general paralysis and insanity with epilepsy. Conditions that were considered as contra-indications for treatment were acute physical illness, mental excitement and resistiveness, also any personal idiosyncrasy.

B.—*Psychological Research.*

In October, 1929, Professor C. Spearman, then Professor of Psychology, University College, London, instituted at University College what was, in effect, an unofficial research clinic. This had as its object the development of an applied experimental psychology in the field of psychiatry. The following three research assistants were appointed for the experimental work :—

William Stephenson, Ph.D. (Lond. and Durh.), M.Sc., A.Inst.P.

Miss C. A. Simmins, M.A.

Miss G. Studman.

Investigations were begun at Horton Mental Hospital in February, 1930. The plan was that the techniques of experimental psychology should be covered in a broad way by the three workers : Mr. Stephenson was to specialize on "p"—factor ("mental inertia," "perseveration," "inhibitive" tendencies) and on "o"—factor ("oscillation," fluctuations in mental output) : Miss Simmins was to develop "g"—measurements (measurements of general ability, "intelligence"), and tests of memory ;

Miss Studman was to devise methods for measurement of "w"-factor (control, persistence of motives). Other factors, notably "fatiguability" (Mr. Stephenson) were to be added when testing time permitted.

By June, 1930, the assistants had constructed and tried out batteries of mental tests, covering the psychological factors mentioned above, that were specially suited for work with patients in mental hospitals. In 1931 they were ready to undertake a critical experiment of the kind discussed by Professor Spearman in the Maudsley Lecture for 1929. (Reported in *Journal of Mental Science*, 1929.)

Psychiatrists and psychologists collaborated in work upon a group of patients; the former gave their psychiatric account of the patients, and the latter provided objective measures of the various psychological factors, employing the batteries of clinical mental tests. The following took a major part in the experiment:

(a) The three research assistants.

(b) Dr. Dorothy M. Wilkins, of the Horton Mental Hospital.

In addition, Dr. J. N. Glaister (Medical Staff, Northumberland House) and Dr. M. Whelan (Horton Mental Hospital) gave assistance in physiological and bio-chemical directions.

The work was centralized at Horton. Over 130 patients were tested by the psychologists, and reported upon by Dr. Wilkins, her notes referring particularly to the mental condition of the patients on the day of testing. The results so gathered are being published in the form of papers contributed to the *Journal of Mental Science*.

One such paper has already been published: "A Case of General Inertia" (*Journal of Mental Science*, October, 1931).

The work of the research assistants and Dr. Wilkins is to continue for a further session. A second large-scale experiment will be undertaken. Patients will be more highly selected, grossly demented cases will be omitted from consideration and particular attention will be paid to schizophrenias, melancholias, manic-depressives and manics, and to epileptics (with and without psychoses).

Commencing with a nucleus of tests that were found to be satisfactory in previous experiments, some new tests, and modifications of some former ones, will be used, with the object of reflecting developments upon some of the theoretical and practical implications of the 1930-31 findings.

It is hoped that this work will add materially to psychiatric knowledge, first with benefit to psychiatric teaching, and ultimately to assistance in the diagnosis, prognosis, and general clinical recording of mental patients. The final aim, of course, is to bring objective methods into psychiatry, in place of highly subjective methods at present extant.

XVIII.—FROM THE LONDON COUNTY MENTAL HOSPITAL, LONG GROVE.

General Report.—By Dr. D. OGILVY, Medical Superintendent.

Routine Laboratory Work.—Interruption of routine work for some months was necessitated by the reconstruction and re-equipping of the existing laboratory. Thus the figures represent work chiefly done since the alterations were completed.

Urine.—Routine examinations, 1,898; sugar examinations, 137; urea estimations, 3; urea concentration tests, 4; bacteriological examinations, 28. Sputum.—82 examinations for T.B. Pus.—Bacteriological examinations, 9; microscopical examinations of smears, 50. Pleural fluids.—Bacteriological examinations, 6. Blood.—Dreyer's test, 10; urea estimations, 6; sugar estimations, 6; glucose tolerance curves, 2; complete counts, 30. Throat swabs. 4. Stools.—Bacteriological examinations, 62; examinations for T.B., 34. Gastric contents, 3; fractional test meals, 3; Sections cut and examined, 20. C.S.F.—centrifuged deposits and bacteriological examinations, 5. Post-mortem examinations were held on 74 patients.

Treatment of Schizophrenia by Carbon Dioxide Stimulation.—On the lines indicated by modern research on the pathology of Schizophrenia, Dr. G. L. Cutts, D.P.M., has been carrying out investigations on the therapeutic value of carbon dioxide stimulation by inhalation, in a small series of recent and old standing cases (16) of this condition showing a more or less pronounced degree of stupor. While some changes particularly in depth of respiration were noted at the time of administration, these changes were by no means constant; and it has not, so far, been possible to come to any definite conclusion as to their significance.

In some of the more recent cases treated by this method, subsequent improvement in the condition of the patient has been very marked. This however may well have been due to the fact that, in the absence of any contra-indications, such cases after entering the male admission unit undergo as a routine measure other forms of respiratory stimulation such as early morning cold baths and physical exercises during the course of the day, also occupational therapy, followed whenever possible by useful employment.

Dr. Cutts proposes to continue his investigations during the present year.

XIX.—FROM THE LONDON COUNTY MENTAL HOSPITAL, WEST PARK.

Report on Research Work.—Communicated by Dr. N. ROBERTS, O.B.E., D.P.M., Medical Superintendent.

Harmalol in the Treatment of Parkinsonism.—By Dr. H. ASTLEY COOPER, D.P.M.

Harmalol hydrochloride, in doses of gr. 4/5 hypodermically, or gr. 8/12 by mouth, has a slight but definite effect in relieving muscular rigidity in Parkinsonism. It has no beneficial effect on the tremor or on the mental condition and does not relieve salivation. In these doses it is well tolerated. It does not produce anything like so complete a relief of all the symptoms as is effected by the alkaloids of the hyoscyne group, but may be of some value as an adjuvant to these, in the treatment of Parkinsonism.

Pyrexial Treatment of G.P.I. by means of Sulphur (in aqueous suspension and in oil), and Values of different arsenical preparations and different combinations in Dementia Paralytica.—By Dr. S. LE ROY SWITZER.

These investigations are being continued.

Treatment of Dementia Praecox with Sulfosin.—By Dr. WM. McCARTAN, D.P.M.

In this series the response of a few cases led one to entertain high hopes, but as the series continued these had to be modified considerably. Six months after the last case had been treated the position was as follows: 16 cases showed no improvement at all, 7 cases had shown varying degrees of improvement but one case in which the improvement had been most marked had relapsed. Although one cannot be enthusiastic over these results, it is felt that sulfosin may possibly improve prognosis a little, and in consequence is worth a more extended trial. The treatment is thus being continued at West Park.

A Survey of Probable Prognostic factors in the treatment of General Paralysis.—By Dr. W. A. CALDWELL, D.P.M.

The data on which the paper was based were obtained from observations made on some seven or eight hundred patients who, while under certificate

in the London County Council mental hospitals, had received treatment by methods such as malaria, relapsing fever, sulfosin, and tryparsamide, or a combination of some of these, together with subsidiary treatment by novarsenobenzene and other arsenical substances. As regards sex, the incidence of neuro-syphilis in women was only one-third of that in men, although the nervous systems of both (as shown by the relative percentages of cerebro-spinal fluid abnormalities) were invaded with equal frequency in the early stages of syphilis. The differences were greater in women who had had one or more pregnancies; the greater the number of pregnancies, the lower was the incidence of neuro-syphilis. An analysis of the figures showed that a previous pregnancy doubled the chances of a successful remission of the disease. As regards age, excluding juvenile paretics, it was found that the younger the patient the better was the prognosis. This was true in a restricted sense, since when dealing with certifiable mental disease one was usually satisfied if the patient reached a state of remission good enough to justify his discharge from hospital, and sufficiently prolonged to allow him to remain out indefinitely; a complete return to the normal was not demanded. If one accepted the first criterion, age was not of such paramount importance, for some patients as old as 56 remitted after treatment, while others over the age of 60 definitely improved. Of discharged patients who could be regarded as economically satisfactory 71 per cent. were under the age of 40. This age factor, however, was of little value in assessing the chances of life in a treated parietic, for in the cases under consideration the highest relative death rate was found in patients between the ages of 36 and 40. Different types of general paralysis were also found to vary in their response to treatment. The expansive, grandiose parietic still appeared to be the most common type, and at the same time gave the highest relative discharge rate; this was very closely followed by the manic type. At the other extremes came the depressed and the juvenile cases. There was a definite tendency for early treatment—treatment begun two to five months after the first manifestation of general paralysis—to give better results, since not only was the discharge rate higher in the earlier months, but the unimproved cases tended to increase proportionately as time elapsed. Malaria was still the most successful pyretic agent, for the others (excepting sulfosin and allied sulphur preparations, the introduction of which was too recent for a correct assessment of their value to be made) were uncertain as regards their production of any reaction, or, having become effective, were uncontrollable in their course. A 10 per cent. better result was obtained if the malaria was followed up by a course of novarsenobenzene.

[*Proc. of the Royal Society of Medicine*, July, 1931. (Section of Neurology and Psychological Medicine.)]

XX.—FROM THE CHESHIRE COUNTY MENTAL HOSPITAL, CHESTER.

Report on Laboratory Work.—By Dr. G. HAMILTON GRILLS, Medical Superintendent.

The following is a summary of the routine laboratory work carried out during the year:—

Urine examinations, 1,351; blood examinations for malarial parasites, 551; Wassermann tests, 440; sputum examinations, 66; Widal tests, 9; examinations of faeces, 122; blood counts, 96; examinations of swabs, 41; examinations of pus, 19; miscellaneous (blood sugars, blood cultures, etc.), 32.

In 12 of these cases autogenous vaccines were prepared.

XXI.—FROM THE CHESHIRE COUNTY MENTAL HOSPITAL, PARKSIDE,
MACCLESFIELD.

General Report.—By Dr. H. DOVE CORMAC, D.P.M., Medical Superintendent.

A.—Laboratory Investigations.

The total number of investigations carried out in the pathological laboratory during the year was 1,773, as follows :—

Routine urine examinations, 1,184 ; bacteriological examination of urines, 12, of faeces, 79, of sputum, 45, of pus, exudates, etc., 52 ; full blood counts, 10 ; examination of c.s.f., 9 ; examination of blood films for malarial parasites, 14 ; chemical examinations of blood, 11 ; tissue sections for microscopical examination, 105 ; agglutination reactions of blood serum, 115 ; Wassermann reactions of blood and c.s.f., 137.

During the year there were again a number of cases of dysentery, 19 cases being so diagnosed. All these were typical clinically, with pyrexia almost always moderate in degree and of short duration, with “ dysenteric ” stools at the onset of the attack containing mucus and gross macroscopic evidence of blood and numerous pus cells and macrophages microscopically. Bacteriological proof of the dysenteric nature of the infection was obtained in 14 of the cases, by culture from faeces or by subsequent serological examination. The causative organism has always been found to be the Flexner bacillus, which was isolated from 10 of the cases, type “ V ” being that most commonly involved. Failure to isolate the bacillus is usually due to lack of freshness of the specimen on arrival at the laboratory ; in several cases there has only been a single blood and mucus stool during the illness. The large majority of the cases occurred in two male wards where many old colitis cases are housed ; there are at present 114 patients—93 male and 21 female—in the hospital on Intestinal Infection Caution Cards by reason of their having suffered one or more attacks of dysentery in the past. It has been very noteworthy that the patients in such a ward who develop an acute attack of dysentery are very frequently those who from physical disability, mental confusion, melancholia or delusions of poisoning by food are extremely difficult to supervise in the matter of an adequate ingestion and absorption of food stuffs ; this nutritional factor has certainly been of importance in 15 of the cases which occurred during the past year. The type of illness in the majority of cases has been very mild, with little evidence of toxic symptoms, though 4 patients died of dysentery—these 4 cases were all in a feeble state of health when the acute infection supervened, being (1) a senile dement with marked cardio-renal degeneration ; (2) a case of acute mania of 10 months’ duration with much emaciation ; (3) a restless, confused and very filthy patient who had required artificial feeding ; and (4) a case of general paresis in the terminal stage.

A serological investigation is at present being undertaken of the staff and patients in the wards in which cases of dysentery have recently occurred against the 5 strains of Flexner bacillus ; so far no case other than those known to have had dysentery have shown agglutination of these suspensions in any significant titre.

Five cases of *Bac. typhosus* infection occurred during the year, with two deaths ; three of these were from wards in which old typhoid cases are segregated, and had received prophylactic inoculation about 2 years previously, including one of the fatal cases, where death followed a severe haemorrhage in the third week. Re-inoculation of the occupants of these wards has been carried out.

Other cases of diarrhoea have again been fairly numerous, only two being of severe type, with mild pyrexia, and frequent loose motions containing leucocytes and erythrocytes in quantities only recognizable on microscopic examination ; from the faeces of one of these *Bac. Morgani* was isolated on two occasions. No other recognised pathogenic bacteria

have been obtained from any of the specimens of faeces submitted for cultural examination, though aberrant types of *B. coli* and various slow fermenters of lactose are occasionally found.

No fresh cases of infection by the tubercle bacillus occurred during the year. Infections of the urinary tract were diagnosed in 7 patients on cultural results from catheter specimens of urine, the organism incriminated being always some variety of *B. coli*.

Of the new admissions during the year 9 male and 3 female patients gave a positive Wassermann reaction of the blood serum—13·43 per cent. of the total male and 3·29 per cent. of the total female admissions; the corresponding percentages for 1930 were 9·57 and 4·35 respectively.

In addition to the above investigations the laboratory furnished reports on 243 specimens submitted from various sources outside the hospital.

B.—The After-History of treated General Paralytics discharged from Parkside.

The malarial treatment of general paralysis of the insane was instituted at this hospital in December, 1924. During the seven years December, 1924, to December, 1931, 55 cases have been treated. During that period 67 general paralytics have been admitted.

A summary of the results of the treatment of 29 cases (the number treated to that date) compared with the results in 29 untreated cases was given in the Annual Report for 1928 and, as the percentages are still much the same for the larger number now treated, no useful purpose would be served by a similar report. It seemed of some value, however, to get in touch with all those cases who had been discharged, to ascertain their present state of health and the manner in which they were fulfilling their social obligations.

For this purpose the following simple questionnaire was sent out to the 19 general paralytics who have received malarial treatment and been discharged. (In passing, the discharge rate among treated cases was 23 per cent. in 1928. It has now risen to 29 per cent. This is the most noticeable alteration in the percentages just referred to.) The questions were :—

1. Are you keeping in good health ?
2. Are you in employment ?
3. If not in employment, is it due to your health, or to inability to obtain work ?

It is realized that the answers received are open to very considerable error (e.g., the patient may be too optimistic with regard to his health and thus wrongly attribute to economic reasons his inability to obtain work). It was necessary, however, to make the questions as brief as possible to encourage the patient to send a reply and it was also realized that, without a very complete social investigation, the incidence of error could not be avoided.

The response to the questionnaire was gratifying, a reply being received in every case, with the following results :—

Health.—14 cases report that they are in good health ; 1 case is reported as having died ; 4 cases report that they are not in good health.

Employment.—9 cases are in employment ; 9 cases are unemployed ; 6 of these state that the reason for their unemployment is slackness of trade, 3 that it is due to ill-health.

Comments.—The cause of death in the case of the one patient who has died was not stated, but his son wrote that his father “ passed away in the infirmary after one week of illness ” 2½ years after his discharge. It would seem, therefore, that his death was due to an acute illness.

With regard to the four cases not in good health, one was discharged under Section 25 to the mental wards of an infirmary and is still there. The wife of another writes "my husband has been much better mentally since the treatment, for which I am very grateful" and states that "he would be better doing some light work." In this case a similar dislike of work was shown by the patient when in hospital. A third patient states briefly "I am under treatment."

In respect of the cases in employment, a list of their occupations would have been of service, as some indication of the degree of their recovery. Although this was not obtained, one patient is back at his old post as a works accountant, and another is doing well as a commercial traveller.

Several patients included letters of appreciation with their replies showing that they have insight into their condition. The following is a typical extract:—"I thank you very much for what was done for me, also thanks to the staff, during my sickness. I am pleased to let you know I have re-started work in my own trade."

This short investigation shows, that, although many patients are received in a stage of the disease too advanced to benefit greatly from treatment, yet the treatment justifies itself by the fact that a fair proportion return to work and support not only themselves but their families, thus avoiding much economic and domestic distress.

Since the Mental Treatment Act of 1930, several voluntary patients have submitted themselves for treatment earlier than would have been the case had certification been necessary, so that the proportion of successful cases should tend to increase.

XXII.—FROM THE CORNWALL COUNTY MENTAL HOSPITAL, BODMIN.

Report on Laboratory Work.—By Dr. W. G. RIVERS, Medical Superintendent.

The work in the laboratory has been to a great extent directed towards the finding of carriers as a result of the outbreak of paratyphoid fever in December, 1930. The sporadic nature of the occurrence of cases on the female side of the hospital suggested the presence of carriers, so preliminary investigations were made with Widal tests (*B. typhosus* group). By this means 7 patients with a positive test to *B. paratyphosus* "B" were found to have the organism in their faeces. Isolation of these patients from 3 out of 5 wards prevented a recurrence of the disease, but as cases were still arising in the other two wards it became necessary to examine the faeces of all the patients in them. One other patient was then found with *B. paratyphosus* "B" in her faeces. Since the isolation of this patient one further case in this ward has occurred, but infection in this instance may have taken place prior to the transfer of the patient from the Isolation Hospital. This investigation is still progressing.

The following is a summary of the examinations made in the laboratory during the year:—

Blood.—Culture for *B. typhosus* group, 38 (positive *B. para.* "B", 11; negative, 27); culture for streptococci, etc., 2 (negative); counts, Hb., etc., 8; sugar estimations (McLean's), 15; Widal test for *B. typhosus* group, 529; Wassermann tests, 168. C.S.F.—Cells, 17; chemical, 17; colloidal gold curve, 15; Wassermann tests, 16; bacteriological, 4 (negative). Faeces.—*B. typhosus* group, 372 (*B. paratyphoid* "B" isolated on 18 occasions); *B. dysenteriae* group, 23 (negative); T.B., 2 (negative); ova and worms, 2 (*oxyuris vermicularis*, 1). Urine.—Bacteriological for *C. typhosus* group, 109 (negative); chemical and microscopical, 276. Sputum (for T.B.), 17 (positive, 1). Gastric contents, 1. Sections, 2. Throat swabs, 7 (negative K.L.B.). Vaccines, 5 (*B. coli*, 1; anti-catarrhal, 4). Water.—Bacteriological, 4 (negative *B. typhosus* group—see above).

XXIII.—FROM THE DEVON COUNTY MENTAL HOSPITAL.

General Report.—By Dr. R. EAGER, O.B.E., Medical Superintendent.

Laboratory Work.—The following is a list of the examinations made during the year 1931 :—

Routine examinations.—Urines, 1,621 ; sputa, 44. Special examinations.—Faeces culture, 24 ; sections, 46 ; blood : (a) counts and differential, 39 ; (b) malaria parasites, 58 ; (c) Wassermann, 66 ; (d) Kahn, 72 ; (e) Agglutination for typhoid, 10. C.s.f. examinations : (a) globulin, protein, cells, 33 ; (b) colloidal gold (Lange) reactions, 35 ; (c) Wassermann, 31. Pus, throat swabs, etc., 106 ; urea concentration, 6 ; blood : culture, 10 ; urea, 5 ; sugar, 5 ; sugar tolerance, 3 ; occult tests, 3 ; Van-den-Berg, 3. Gastric analysis, 7 ; post-mortem examinations, 83.

*Treatment of General Paralysis.*1. *By Induced Malaria.*

Seven cases of general paralysis of the insane (5 male and 2 female) were treated during the year.

Two cases (1 male and female) were discharged and have maintained their improvement. Of the remainder 4 show no material improvement but have improved physically, are cleaner in habits and remain free from congestive attacks. The remaining case died about 3 months after the treatment was terminated.

Four cases were infected by mosquitoes direct and three by blood inoculation.

Four cases also received a course of tryparsamide injections which in certain cases is considered a useful adjuvant to malaria treatment.

A total of 53 cases have now been treated in this hospital by induced malaria since 1925. Of these 23 have been discharged, disclosing a percentage of 43·8. Only 4 cases have returned on account of relapses. Those at home are asked to come to the clinic in Exeter, so that their condition can be periodically reviewed. One case has been home now nearly 6 years without a relapse.

To anyone who has experienced that in the past the diagnosis of g.p.i. was equivalent to passing a death sentence within 3 years, the position now existing with regard to this disease is a revelation and the importance of ascertaining the earliest signs of this disease now becomes a matter of the utmost importance, for there is no doubt that many cases still come under treatment far too late to arrest the disease before it has extended so far as often to preclude the patient from being a useful citizen, although he may live a life of comparative comfort to himself and relations for many years.

2. *By the Sulphosin Leo Treatment.*

One case, S. H. B., admitted 14th August, 1930, suffering from g.p.i. was treated with intra-muscular injections of Sulphosin Leo. A course of 9 injections was given.

These were made into the muscle on the outer aspect of the thighs. The temperature responses were not satisfactory and were in no way comparable to those obtained with malaria treatment. The highest temperature obtained was 103° F., and that only on one occasion.

The injections caused no local inconvenience, but the patient's physical condition deteriorated greatly, and no mental improvement resulted. He is a dull, confused type of general paralytic, who was transferred here from another mental hospital, where he was admitted in June, 1929, and while there it is understood that malaria inoculation failed on several occasions, and that he had received tryparsamide injections.

Treatment of Dementia Praecox.

The Sulphosin treatment has also been tried in one case of dementia praecox in the stage of katatonic stupor.

Three rises of temperature up to 102.5° F. and two up to 103° F. were produced but the desired mental reaction was not realized.

Thyroid feeding was also tried in the same patient which caused some temporary improvement, but this relapsed again when the thyroid had to be discontinued owing to tachycardia.

Investigation of a case of "Pseudo Mirror Writing".

During the year under review we have been fortunate in having received under our care a case of pseudo-mirror writing which on careful investigation over many weeks by Dr. R. Eager and Dr. J. Fisher (who was acting as locum here and in whose wards she was) has proved to be unique.

This was a female patient aged 28, who was admitted to this hospital in September for "fits" for which she had previously been in an epileptic colony. No mention of the peculiar writing was made but it was found that she wrote everything backwards. Her writing was not true "Mirror Writing" as the letter symbols were not reversed and her writing could not be read when reflected in the mirror, but the word "Devon" would be written "noved" and every word, in many letters which she wrote to her relatives and friends, was similarly reversed. Further she wrote in this fashion quite fluently and if asked to spell such words as "hippopotamus" would do so backwards without hesitation. Asked what "hospital" spelt she would reply "I don't know, sir," but asked what "latipsoh" spelt, repeating the letters backwards in this fashion quite quickly, she would, without hesitation, say "hospital." It was also found that when asked to read anything she turned the book or paper upside down before she could do so, and that if shown a pen with the nib pointing up she would describe the nib as pointing down, and vice versa. In fact everything to this patient seemed inverted and, after being allowed to tidy a sister's room one day, it was found that all the pictures on the walls and photographs on the mantelpiece were replaced "upside down" after she had finished.

This combined with the fact that there was a history, prior to admission of the patient, of having had a "fit" followed by loss of speech for a considerable time, led one to think that these symptoms might be the *sequelae* to an organic lesion, causing the normal inversion of objects on the retina to be disturbed.

In looking up the available literature on mirror writing it was found that this has sometimes followed a right-sided hemiplegia in addition to occurring in some cases of locomotor ataxia, hysteria and some imbeciles.

It is also said to be easily acquired by highly nervous individuals and to be more common in women.

In this case it was suggested that there might be a defective psychological adjustment of the inverted brain image by the dominant hemisphere, and that the patient seemed to read and to draw as she "sees," not as she "perceives." She readily admitted her mistakes when the sense of touch came into play or when she knew from experience that things must be the opposite, and that although she drew things upside down she perceives them as being the right way up.

It seemed that it was only with reference to things of which she has had no previous experience and could not bring intelligence into play that she made these serious errors.

At this stage (November 26th, 1931) the case was demonstrated to the local Medical Society at the Devon and Exeter Hospital in Exeter.

Further investigations into her case were then proceeded with, and it was eventually concluded that the case must be a "functional" one and that no organic lesion could exist.

It was decided, therefore, to place her under light hypnosis with the idea of suggesting to her that these symptoms, including the fits, would disappear.

This was done on January 13th, 1932, and before leaving the room after the first hypnosis she was asked to write the operator's name on a piece of paper, this she did in a normal manner for the first time since admission, and the following day wrote a perfectly normal letter.

Her "fits" have ceased and she now presents herself as a normal individual and cannot read her former writings.

It is hoped that a more detailed description of this case will shortly appear in *The Lancet*.

On December 3rd Dr. Eager gave an address to the members of the North Devon branch of the College of Nursing at Barnstaple on the "Mental Disorders Associated with Childbirth," the context of which was published in *The Nursing Times* of January 23rd, 1932, and the three consecutive weekly editions of that journal.

XXIV.—FROM THE DORSET COUNTY MENTAL HOSPITAL.

Pathological Report.—Communicated by Dr. P. W. BEDFORD, D.P.M., Medical Superintendent.

Analysis of Pathological Investigations.—During the year, 2,029 examinations were carried out in the laboratory, as follows :—

Urine.—Chemical, deposit, etc., 890 ; sugar estimations, 47 ; albumen estimations, 23 ; urea estimations, 12 ; bacteriological examinations, 9. Blood.—Widal reactions, 182 ; Meinicke's reaction, 161 ; polynuclear count, 63 ; Schilling index, 33 : red and white cell count, 27 ; Wassermann, 25 ; sugar estimations, 35 ; blood sedimentation test, 2 ; Van den Berg's reaction, 2 ; icterus index, 1 ; urea estimation, 1. Bacteriological examinations.—Faeces, 263 ; water, 90 ; sputum, 24. C.s.f.—Chemical examination, 14 ; Takata Ara, 15 ; gum mastic, 16 ; Meinicke, 17 ; Wassermann, 6. Bacteriological examinations.—Pus, 9 ; throat swabs, 5 ; gall bladder, 2. Vaccines prepared, 1. Disinfectant, Phenol Co., 1. Pathological sections, 53.

Search for Typhoid and Dysentery Carriers.

During the year 263 specimens of faeces were examined. All were cultured on the bismuth sulphite agar of Wilson and Blair, as well as on McConkey agar.

(a) *Typhoid.*—No fresh cases of typhoid have occurred during the year. Two of the known carriers were operated upon and the gall bladder removed.

Case No. 1. Mary M.—Gall bladder removed 11.2.31. Five gall stones present. *B. typhosus* present in pure culture from both the bile and an emulsion made from the centre of the gall stones. Subsequent examinations of the faeces over a period of eight months have revealed the complete absence of *B. typhosus* from the stools.

Case No. 2. William B. Gall bladder removed 2.12.31. Six gall stones present. *B. typhosus* was isolated from both the bile and gall stones. In this case the operation wound developed an infection with *B. typhosus* and healed slowly. Four specimens of faeces were examined at weekly intervals and three of them still revealed the presence of *B. typhosus*. One of the carriers operated upon in the previous year has so improved that she has been discharged.

(b) *Dysentery.*—Four fresh cases have occurred during the year, three on the male side all in the same ward, and one on the female side. In all

of these *B. dysent.* Flexner was isolated. New admissions: Of the 143 specimens examined, only 16 had in them bacilli which failed to ferment lactose:—Morgan's No. 1, 1; No. 11, 1; No. 13, 1; No. 14, 10. Douglas & Colebrook's No. 8, 2. *P. proteus*, 1. None of these were proved dysenteric organisms.

Hyperglycaemic Index in Melancholia.

During the latter part of the year a study was made of the glucose tolerance curve in cases of melancholia with special reference to the Hyperglycaemic Index H.I.
$$\frac{\text{Two-hour blood sugar—fasting level}}{\text{Maximum blood sugar—fasting level}} \times 100,$$
 and its correlation with the prognosis of the mental state. This investigation is being continued.

Water Chlorination.

This has been carried on throughout the year. On three occasions organisms belonging to the *B. coli* group have been present in the chlorinated water. After an increase of chlorine, these organisms disappeared.

Neuro-Syphilis.

A routine examination was made of the blood of all new admissions, using the Meinicke macroscopic test, which has been found sufficiently accurate for clinical purposes. Of 161 sera, 11, or 6.8 per cent., were positive. The positive or doubtful readings were checked against the Wassermann reaction and the diagnosis of neuro-syphilis established by examination of the c.s.f. Twelve cases were treated by tryparsamide. Improvement, if noted, occurred in the first three months of treatment; after six months' treatment the effect of further injections was slight or nil. The majority of cases treated were in an advanced stage of the disease. Two died, two showed no improvement; the other eight benefited by treatment in varying degree. One case recovered sufficiently to be discharged. Over a period of the year, bismuth therapy was used in conjunction with tryparsamide. The use of this method has been discontinued; its toxicity seemed greater than its remedial effect.

XXV.—FROM THE ESSEX COUNTY MENTAL HOSPITAL, BRENTWOOD.

General Report.—By Dr. T. D. POWER, M.R.C.P., D.P.M., Deputy Medical Superintendent.

A.—Routine Laboratory Work.

The total number of examinations performed in the pathological laboratory during 1931 was 4,535; a summary of these is appended:—

Blood counts, 2,249; Wassermanns, 269. C.S.F.—Wassermanns, 109; cells, globulins, etc., 104; colloidal gold reactions, 104. Urine.—Chemical, 369; bacteriological, 41. Blood.—For malarial parasites, 380; for Widal reactions, 38. Vaccines prepared, 29. Faeces.—Bacteriological, 117; chemical, 3. Blood.—Ureas, 17; sugars, 26; non-protein nitrogen, 11; cultures, 2. Pus bacteriological, 62. Sputum microscopical, 71. Throat swabs, 108. Sections, 304. Animal inoculations for diagnostic purposes, 9. Gastric analysis, 2. Van den Berg reactions, 45. Museum specimens mounted, 8. Reticulocyte counts, 51. Miscellaneous examinations, 7.

B.—Publication.

Alleged Haemoclasia in the Insane: a study of 50 cases, with special reference to technique. By T. D. POWER, M.D., M.R.C.P., D.P.H.,

D.P.M., Deputy Medical Superintendent, Brentwood Mental Hospital, and A. W. PETTITT, Laboratory Assistant-in-Charge. *Journal of Mental Science*, January, 1932, pp. 147-159.

XXVI.—FROM THE ESSEX COUNTY MENTAL HOSPITAL, COLCHESTER.

Report on Research.—Communicated by Dr. R. C. TURNBULL, Medical Superintendent.

The Relationship between the Blood Cholesterol and Mental Disorders.

Dr. A. G. Duncan has continued his research into the relationship between the blood cholesterol and mental disorders, previously published in the *Journal of Mental Science*, 1930, and noted in the 16th Report of the Board of Control.

The further investigation is concerned mainly with the effect of thyroid on blood cholesterol. It was observed that during treatment of a sub-thyroidic man with the dried gland, improvement coincided with a fall in blood cholesterol from 502 mgrm per 100 c.c. to normal—158, and on suspending the treatment the figure rose to 414. Twenty-two patients suffering from various types of psychosis and mental deficiency were then treated with dried thyroid and the effect on blood cholesterol recorded. The variation was found to be a constant one, whatever the nature of the mental disorder. There was a rapid lowering of blood cholesterol, followed after about a week or ten days by more gradual fall, or even slight rise, despite large doses of thyroid. When thyroid administration was stopped, the value rose fairly rapidly to an amount considerably above the initial figure. The greatest variation was in a case of melancholia with chronic nephritis—a fall from 335 to 176 in eight days, and subsequent rise to 573. The minimum value induced by thyroid was 87—about half the normal figure.

This tendency of blood cholesterol content to fall during thyroid administration was confirmed in a healthy man, and in guinea pigs and rabbits.

Replacing thyroid by emotional reaction, it is possible to explain the cholesterol variation usually met with in psychotic patients. The hypercholesterinaemia of the apathetic is equivalent to that of the sub-thyroidic. The fall in blood cholesterol found in states of excitement and agitation corresponds with that induced by thyroid administration. The customary raised level of blood cholesterol in remissions or improvement following emotional instability is similar to the hypercholesterinaemia which follows the hypocholesterinaemia induced by thyroid.

Whenever thyroid effect any change in the mental state, such change was that to be expected from increased excitability of the nervous system.

It is Dr. Duncan's view that cholesterol is a factor which plays a part in determining the excitability of the nervous system ; so that any situation of emergency or of sudden emotional reaction causes hypocholesterinaemia—probably by medium of the thyroid gland ; and such hypocholesterinaemia maintains the increased excitability of the nervous system until the crisis has passed, when there is a rise in blood cholesterol to an abnormally high degree, coinciding with a period of rest, or diminished nervous excitability. Perhaps the synapse is the situation at which cholesterol effects this change.

(Published in *Journal of Mental Science*, April, 1931.)

XXVII.—FROM THE GLAMORGAN COUNTY MENTAL HOSPITAL.

General Report.—By Dr. D. FINLAY, Medical Superintendent.

A.—*Routine Work.*

1. General urine examination of all cases annually. 2. Quantitative examination of sugar in urine. 3. Blood examinations. 4. Post-mortem examinations in all cases not objected to by relatives. 5. (a) Wasserman, (b) Faecal examinations, (c) Sputa for T.B. by County Pathologist.

B.—*Treatment of General Paralysis.*

(1) *Dmelcos vaccine therapy* in 8 male cases of g.p.i. as a substitute for malarial therapy. Good re-actions were obtained in all cases, but the investigation is too premature to give concrete results.

(2) *Sulfosin injections* in increasing doses from 1 c.c. up to 10 c.c. intramuscularly have been tried in three advanced cases of g.p.i. Two who have died since the treatment were not improved. The third who reacted best and who complained of severe local pains which he termed "rheumatics" manifested considerable improvement, and from being bed-ridden, too shaky to stand, confused, and defective in habits, he has become able to be up and about, clean in habits, and careful of personal appearance. He enjoys conversation, reads a little and employs himself in the ward. He is still, however, feeble-minded, and his speech is affected as before treatment.

XXVIII.—FROM THE GLOUCESTER COUNTY MENTAL HOSPITAL.

General Report.—By Dr. F. C. LOGAN, Medical Superintendent.

A.—*Routine Laboratory Work.*

The following pathological examinations were made during the year:—

Blood examinations.—Agglutinations, 2; calciums, 39; films for malaria, 13; sugars, 51; Wassermanns, 907. C.s.f. (complete examination), 12; conjunctival cultures, 2. Faeces.—Bacteriological, 9; occult blood, 8. Milk.—Routine examinations, 33; for t.b., 1. Pus, 5; throat swabs, 10; sputum for t.b., 4; Urine.—Chemical examination, 174; bacteriological, 5. Vaccines prepared, 1; examinations of tissues, 1.

B.—*The Biochemical Aspects of Idiopathic Epilepsy.*—By Dr. L. HAVILAND MINCHIN.

The research work in progress in the hospital is at present mainly concerned with the biochemical aspects of idiopathic epilepsy. Specimens of blood are examined with special reference to their glucose content in order that any relationship between epilepsy and hypoglycaemia due to a hypofunction of the Islets of Langerhans may be demonstrated.

At the same time any over sensitivity of the Motor nervous system, due to an abnormality of the calcium content of the blood is being investigated.

At the present time, while a series of figures have been obtained, no conclusions have yet been reached, but it is hoped that a paper will be available for publication in due course.

XXIX.—FROM THE HAMPSHIRE COUNTY MENTAL HOSPITAL, KNOWLE,
FAREHAM.

Pathological Report.—Communicated by Dr. J. L. JACKSON, Medical Superintendent.

Laboratory Work.—(Pathologists : Dr. C. E. A. SHEPHERD, D.P.M., and Dr. I. ATKIN.)

The following examinations were made during the year :—

Blood.—Complete counts, 6 ; malarial films, 19 ; Wassermann reactions, 5 ; agglutination tests, 9. Urine.—The routine tests are performed in the wards. The following special examinations were made :—Bacteriological, 18 ; cytological, 10 ; sugar estimations, 4 ; albumen estimations, 6 ; miscellaneous, 3. Bacteriological examinations.—Throat swabs, 19 ; sputa, 29 ; faeces, 17 ; pus, etc., 14 ; skin-scales, hair, 3. Animal inoculations, 2. Post-mortems, 46 (64 per cent. of the deaths).

The search for *enteric carriers* is being continued. Of the patients who have suffered from acute infection during the year, one (E.T.) is still excreting *B. paratyphosus B.* five months after her illness. The first sub-culture of the organism was but weakly agglutinated by standard immune serum ; second and third broth sub-cultures, however, were readily agglutinated. The patient in question has been added to the list of carriers.

XXX.—FROM THE HAMPSHIRE COUNTY MENTAL HOSPITAL, PARK
PREWETT, BASINGSTOKE.

General Report.—By Dr. J. J. O'REILLY, D.P.M., Pathologist.

Laboratory Work.—The following is a summary of the work done in the Pathological Laboratory during the year :—

Urine.—Routine examinations, 1,268 ; sugar examinations, 93 ; bacteriological examinations, 8 ; microscopic, 113. Blood.—Differential counts, 55 ; total cell counts, 47 ; haemoglobin, 40 ; blood sugars, 12 ; Meinicke reactions, 138 ; bacteriological examinations, 7 ; agglutination reactions : *B. abortus* and *melitensis*, 158, *B. typhosus*, 4 ; blood urea, 1. C.s.f.—Chemical examinations, 19 ; cell counts, 19 ; colloidal gold, 19 ; Wassermann reactions (at county laboratory) : blood, 88 ; c.s.f., 20. Chemical examinations.—Water, 8 ; faeces, 2. Bacteriological examinations.—Sputa, 49 ; throat swabs, 8 ; urethral and vaginal discharges, 11 ; water, 68 ; faeces, 21 ; exudates, 12 ; vaccines prepared, 2 ; animal inoculations, 6. Histology.—Sections, 16.

The Meinicke reaction (macroscopic) was used as a routine test for all admissions, supplemented by the Wassermann test in all positive or doubtful cases. Of these 12 cases occurred, in 8 of which both tests were in agreement. In the remaining 4, 2 of which were doubtful and 2 strongly positive, the Wassermann reaction was negative.

Undulant Fever.—Further to the previous report on this outbreak, the Institution's herd was examined for evidence of *abortus* infection with negative results ; so far, it has proved impossible to discover the original source of infection.

Agglutination tests were carried out on 158 cases during the year ; 10 of these gave positive reactions in dilutions ranging from 1 in 25 to 1 in 250. None of these cases showed clinical evidence of undulant fever and in none of them was it possible to recover the organism in culture.

XXXI.—FROM THE HERTS COUNTY MENTAL HOSPITAL, ST. ALBANS.

Laboratory Report.—By Dr. W. J. T. KIMBER, D.P.M., Medical Superintendent and Dr. A. M. McGRATH, Pathologist.

During the year, 2,406 examinations were carried out in the laboratory and a summary of them is appended.

Urines.—Lead salts, 1; acetone only, 8; indican, 1; albumen only, 74; microscopy, 31; routine, 313; cultures, 9; quantitative sugar, 200; bile, 2; urea, 1. Blood.—Full count, 31; W.B.C. and differential, 94; urea, 2; culture, 1; W.R., 268; malaria, 7; sugar, 4; Widal, 7; cholesterol, 15. C.s.f.—W.R., 26; routine, 27; culture, 1; urea, 1; cholesterol, 2. Sputa.—T.B., 8. Stools.—T.B., 24; culture, 35; blood (occult), 2; microscopy, 1. Throat swabs.—For B. Dip., 8; for other organisms, 4. Miscellaneous.—Cervical swabs, 1; sections, 4; vomit for blood, 1; vaccines, 12; gastric H.C.L., 2. Cultures.—Tonsils, 16; teeth, 4; nasal, 1; colon, 5; gastric contents, 1; cervical, 2; milk: for Grade "A", 39, for acid alcohol fast organisms, 2. Autopsies, 39 (66 per cent. of deaths). Other examinations, 1,079.

Other examinations include a number carried out for the County Medical Officer of Health and for a number of voluntary and Public Assistance hospitals in the county, etc.

Anaerobic Cultures.—In co-operation with the Ear, Nose and Throat clinic, cultures have been made from the tonsils removed from 16 patients during the year. During the first six months cultures were made aerobically and anaerobically, but the latter was found to be of little assistance because in each case similar organisms were found anaerobically as under aerobic conditions. One vaccine was made during this time, streptococci (non-haemolytic) and pneumococci being very numerous in the tonsils but no improvement followed its use.

"Pathogen-selective" Cultures.—During the second half of the year the method of "pathogen-selective" culturing was pursued. Several loopfuls of septic material were put into saline. Into this 5 c.c. of the patient's blood was placed, and after 24 hours this was examined and also subcultured to see what growth, if any, had taken place. Controls were put up also from the septic material on blood media not obtained from the patient. Vaccines were then prepared from organisms which had grown from cultures containing the patient's own blood. Anaerobic cultures were also done on the patient's own blood containing the septic material and in one case this anaerobic culture grew well. This was a non-haemolytic streptococcus. This case was specially interesting in view of much recent work on streptococci in puerperal fever, since this woman was a case of puerperal insanity who, after tonsillectomy and vaccine treatment, showed distinct improvement and has since been discharged.

The only other case in this series of 10 pathogen-selective cultures from tonsils in which growth occurred in the patient's blood was from an old-standing case of post-encephalitis. Here diplococcus crassus grew, but the resulting vaccine effected no improvement in the patient.

This method of culture was also pursued in the case of teeth extracted from 2 patients. In one of these the result was a good growth of streptococcus non-haemolyticus and pneumococcus, and in the other a haemolytic streptococcus. In both of these cases vaccines were given but in both the results were inconclusive.

XXXII.—FROM THE KENT COUNTY MENTAL HOSPITAL, CHARTHAM.

Laboratory Report.—By Lt.-Col. M. A. COLLINS, O.B.E., Medical Superintendent.

Subjoined is a summary of the 4,340 examinations carried out in the laboratory during the year :—

Urine.—Routine, 2,904 ; sugar (est.), 150 ; albumen (est.), 98 ; bacteriological, 85
Faeces.—Dysentery and typhoid groups, T.B., 215. Sputum.—T.B., 80. Throat
swabs, 41. Blood.—Syphilis diagnosis (Meinicke), 52 ; Widal, 18 ; counts, 68 ;
malaria, 8. Vaccines, 2. C.s.f. (Syphilis diagnosis), Lange, 46 ; Pandy's, 46. Nasal
Sinus Lavages.—Bacteriological investigation, 383. Pathological sections, 21. Mis-
cellaneous (pus, etc.), 38. Post-mortems, 85.

XXXIII.—FROM THE KESTIVEN COUNTY MENTAL HOSPITAL, SLEAFORD.

Laboratory Report.—By Dr. N. K. HENDERSON, D.P.M., LL.B., Medical Superintendent.

The following is a summary of the investigations carried out during the year :—

C.s.f.—Wassermann, Lange, cells and protein, 10. Blood.—Wassermann, 40 ;
counts, 6 ; malarial films, 30 ; Widal, 64 ; sugar, 6. Bacteriological.—Faeces, 19 ;
sputa, 8 ; swabs, 5 ; urine, 2. Tissues—histological, 2. Post-mortems.—Examinations,
16 (48 per cent. of deaths) ; tissues, 3. Urines.—General, 760 ; microscopic, 50 ;
special, 11.

XXXIV.—FROM THE MIDDLESEX COUNTY MENTAL HOSPITAL, NAPSURY.

Report of Clinical and Pathological Investigations.—Communicated by
Dr. A. O'NEILL, O.B.E., Medical Superintendent.

Laboratory Work.—The following is a summary of the investigations carried out in the laboratory during 1931 :—

Bacteriology.—Sputa (for T.B., etc.), 31 ; throat and other swabs, 11 ; gastric
cultures, 2 ; faeces : complete examination, 27, typhoid carriers, 29 ; urines : general,
16, typhoid carriers, 27 ; blood cultures, 9. Biochemistry.—Blood : sugar, 10,
chlorids, 1, urea and N.P.N., 6 ; Van den Bergh, 6 ; colloidal gold, 36 ; globulin in
c.s.f., 36. Pathology.—Post-mortems (deaths 134), 120 ; specimens preserved, 57 ;
sections made, 343. Routine tests.—Wassermanns : blood, 466, c.s.f., 34 ; urines,
583 ; blood counts, 17 ; cell counts in c.s.f., 31 ; X-Rays, 116.

During the month of December two cases of enteric fever occurred in the female wards ; these cases both came from the same ward. It was arranged that all the faeces and urines of suspected carriers should be promptly examined. As a result of this one female patient was found to be excreting typhoid organisms in her urine. This patient was promptly isolated.

Bacteriological investigations continue to be made in selected cases using the anaerobic technique of Dr. Ford Robertson. The findings are a little difficult to interpret but it would seem to be a valuable field for further research.

During the year special study has been made of the endocrine glands. Careful note is being made of the weight and sections prepared from each gland.

Ultra-microscopic study of the protein particles is still being carried out and an attempt being made to correlate the changes observed with the mental and physical state of the patient.

A start has been made on the new pathological museum and it is hoped to have it completed shortly.

The daily recording of the prevailing weather conditions is being continued.

Cases of general paralysis continue to be treated by T.A.B. injections followed by a course of N.A.B.

Results for the year are :—8 cases treated ; 3 discharged—recovered. 2 improved. 1 not improved. 2 dead.

XXXV.—FROM THE STAFFORD COUNTY MENTAL HOSPITAL, STAFFORD.

Report on Laboratory Work.—By Dr. B. H. SHAW, Medical Superintendent.

The following is a brief résumé of laboratory work during the year 1931 :—

A.—Research.

Investigation has continued regarding :—

- (1) The biochemistry of cholesterol.
- (2) The oxygen carrying capacity of erythrocytes.
- (3) Certain biochemical problems in epileptic states.

B.—Routine.

Bacteriological.—Stools for T.B., and other organisms, 42 ; sputa for T.B., 70 ; various, 15 ; autogenous vaccines, 9. Pathological.—Post-mortems, 57 ; histological sections, 35 ; blood counts, Hb.O., estimations, etc., 34. Serological.—Wassermanns, 121. Biochemical.—Whole blood cholesterol estimations, 42 ; urines—various, 1,520.

XXXVI.—FROM THE STAFFORD COUNTY MENTAL HOSPITAL, BURNWOOD.

Report of Work carried out by Dr. Wm. Jos. Kirwan and Mr. Sale.—Communicated by Dr. WILLIAM REID, Medical Superintendent.

Examinations in the laboratory during 1931 numbered 1,494, as follows :—

Faeces.—For typhoid and dysentery, 377 ; for tubercle, 21. Urines for. Typhoid, 124 ; abnormal constituents, 385. Blood for.—Wassermann reaction, 192 ; complement fixation (tubercle), 17 ; agglutination tests (various), 14 ; malaria, 79 ; calcium content, 58. C.s.f. for gold curve tests, 25 ; for cell-counts, gum-mastic, Boltz, Pandey and Nonne-Apelt tests, 25. Sputa for tubercle, 25. Drinking water for organisms, 39. Milk, food and diseases of farm stock, 60. Throat swabs, autogenous vaccines, sections, etc., 53. 72 Post-mortems (90 per cent. of deaths) were made during the year.

Ten cases of general paralysis were treated with malarial blood—benign tertian, of which two made good recoveries and have since been discharged, one is *in statu quo*, three are in an improved state, one was improved but is again degenerating, and two died later of general paralysis. One case which had received treatment by malarial blood a month before transfer from another mental hospital died of general paralysis seven months after admission to this mental hospital. Tryparsamide injections are now being employed here in addition to malarial treatment, but so far it is too early to say with what effect.

Early in the year two female patients were found to be typhoid carriers. These have required repeated examinations, and have still to be isolated, giving occasional positive results in the faeces.

XXXVII.—FROM THE EAST SUSSEX COUNTY MENTAL HOSPITAL, HELLINGLY.

A.—*Report of Clinical and Scientific Investigations.*—By Dr. GEOFFREY SHERA, M.A., Pathologist.

The total output of the department has increased by 830 tests. All of these were in respect of work for the County Medical Officer of Health.

There were no cases of typhoid, dysentery or diphtheria during 1931, but in the early part of the year there was a heavy incidence of pneumonia, which accounts for the increased number of autopsies.

The technical part of this report comes under three headings :—

(a) *Routine Clinical Research*, dealing with scientific medicine in its application to the problems of disease as they arise from day to day in the Institution, such as suspected cases of dysentery or typhoid, blood analyses, Wassermann tests, autopsies and manifold diagnostic procedures.

(b) *Public Health (County) Work.*—This work has shown a marked increase. The laboratory is recognised as the county laboratory, and the scope and number of the tests have expanded, as will be seen from the details below.

(c) *Pure Research Work.*—This comes under two headings: firstly, research concerned with new methods of analysis, and secondly, original investigations upon the causes and effects of mental disease in relation to the human mechanism.

Routine Clinical Research.

(a) *Incidence of Tuberculosis in New Admissions.*—The following figures are of interest in showing at least part of the incidence of active tuberculosis in new admissions during 1931. All new admissions have their blood tested not only for the Wassermann test, but also for the tuberculosis complement fixation test, which gives positive readings in most of the marked and active cases, but is not always positive in localized and healing lesions. These figures therefore only reflect part of the incidence of tuberculosis :—

Tuberculosis Complement Fixation Test.

Number of Blood Tests on New Admissions.	Positives.	Negatives.	Percentage of Positives.
231	24	207	10·4

(b) *British Medical Association.*—In 1931, the pathologist was elected chairman of the Museum Committee and vice-president of the Section of Pathology and Biochemistry. The former post involved the organization of the Association's museum of 1,200 exhibits at Eastbourne. About 30 specimens were sent from Hellingly and were much appreciated. Several were the subject of special comment in the *British Medical Journal*. The Association particularly welcomes exhibits from mental hospitals, which have been all too scarce in the past, and these exhibits enable medical men to appreciate the value of pathology in relation to mental science.

(c) *Sulfosin Treatment of Dementia Praecox.*—White cell counts have been performed on all cases receiving this form of treatment. They are the index of its efficacy and serve as a controlling index. This work has involved a number of blood examinations (135).

(d) *Sewage Effluent.*—Examination of water and sewage effluent have been undertaken by the department in conjunction with the Resident Engineer and Surveyor, in order that he might assess the state of the water supply and sewage purification.

(e) *Malarial Treatment.*—The following is a record of two malarial treated general paralytics, before and after treatment, as regards their blood and cerebro-spinal fluid. It is of interest to compare the results with those obtained by intrathecal salvarsanized serum treatment. These results are clearly inferior as regards the improvement as shown by tests.

Pathological Findings.

No. of Case.	Wassermann Reaction.		Colloidal Gold Test.	Globulin Tests.		Total Protein.	Cell Count.
	Blood.	C.S.F.		Pandy.	Nonne-Apelt.		
(1) Before : After :	+ + 7 or more units	+ + 7 or More units	5555550000	+	+	0.09 per cent.	30 per c.mm.
	+ + 7 or more units	+ + 7 or more units	5555550000	+	+	0.10 per cent.	5 per c.mm.
(2) Before : After :	+ + 7 or more units	+ + 7 or more units	5433210000	+	+	0.06 per cent.	20 per c.mm.
	+ + 7 or more units	+ + 7 or more units	3332455400	+	+	0.08 per cent.	50 per c.mm.

A number of autogenous vaccines have been prepared for members of the nursing staff.

Herewith is appended a classified list of routine investigations for 1931, with comparative figures for 1930 :—

	1930	1931
<i>Pathology.</i>		
Blood examinations (various)	254	444
General pathological tests	985	1,058
Special pathological tests	265	11
V.D. tests (Wassermann, etc.)	476	378
Tissues for histological section	37	11
Post-mortem examinations	64	89
	<hr/> 2,081	<hr/> 1,991
<i>Bacteriology.</i>		
General bacteriological tests	682	667
Special bacteriological tests	6	9
Autogenous vaccines prepared	5	3
Widal reactions	15	17
	<hr/> 708	<hr/> 696
<i>County Work.</i>		
<i>Tests under the Tuberculosis Order (1925).</i>		
Biological	4	17
Histological	—	2
Microscopical	7	20
	<hr/> 11	<hr/> 39
<i>Tests under the Milk and Dairies (Consolidation) Act.</i>		
Biological	199	454
Microscopical	259	651
Cultures	33	11
	<hr/> 491	<hr/> 1,116
<i>Tests for Public Health Authority.</i>		
Sputa for tuberculosis... ..	590	630
Swabs for diphtheria	63	295
Milk (two samples)	—	6
Faeces	—	4
Blood tests	—	4
Pleural fluid	—	14
Urine	—	2
Autogenous vaccines	—	2
Other tests	25	—
	<hr/> 678	<hr/> 957
Autogenous vaccines for the East Sussex Insurance Committee	4	2
	<hr/> 3,973	<hr/> 4,801

Research Work.

Work has been confined to the treatment and effects of intrathecal injections of neo-salvarsanized auto-serum. So far, six cases have received this treatment. Of the first four, three have been discharged cured, and the other died, being too advanced to benefit. Of the last two, which remain under treatment, one is now mentally normal but is suffering from generalized dermatitis, which is clearing up, and the other has improved slightly. It is of interest to note that not only have these six cases shown in 66·6 per cent. complete mental recovery, but that the improvement in the blood and cerebro-spinal fluid has been quite definite in most. The treatment involves a longer time than malaria, but is not only much less dangerous—the risks being merely those of ordinary

salvarsan treatment as carried out in hundreds of V.D. clinics daily all over the country—but gives superior results and leaves no after-risks such as malaria may occasionally do. It can nearly always be performed without any anaesthetic, but a single draught of paraldehyde is advisable. In three cases it has been followed up by tryparsamide and bismuth injections. Although the number of cases so treated is not numerous (but only from lack of material), this form of therapy promises to be a most valuable addition to our weapons for combating general paralysis. The injections have all been given via the lumbar route, followed by tilting of the lower end of the bed in order to gravitate the serum towards the brain. If it had been possible to have a general anaesthetic, the direct route to the brain (via the cisterna) could have been used. It seemed, however, desirable, to avoid general anaesthetics if possible, and the lumbar route seems to have been quite effective. Moreover, it has the advantage of being practically devoid of risk, and enables the spinal cord to share in the medication of the injected serum. It can only be carried out where there are laboratory facilities.

The following summary is of interest in connection with the clinical aspect :—

Case No.	Sex.	Age.	Weight :—		Clinical Results.
			Before Treatment.	After Treatment.	
1	Female	34	8 st. 1 lb.	12 st. 1 lb.	Recovered mentally and physically. Discharged.
2	Female	64	7 st. 7 lb.	9 st. 6 lb.	Recovered mentally and physically. Discharged.
3	Female	51	7 st. 12 lb.	8 st. 6 lb.	Recovered mentally and physically. Discharged.
4	Female	52	7 st. 4 lb.	?	Died. Never improved. Too advanced.
5	Female	33	7 st. 11 lb.	8 st. 8 lb.	Slight improvement physically and mentally. Still under treatment. Outlook poor.
6	Female	44	8 st. 5 lb.	8 st. 2 lb.	Mentally recovered. Had severe dermatitis : this is clearing up.

Whole Blood Injections in Epilepsy.

These are being tried by Dr. Krausz at my suggestion on the theory that epilepsy is a form of protein sensitization, and that these injections will de-sensitize the patient. It is too early to report results as yet.

I should like to express thanks to our two technical assistants, Mr. Wallace Reed and Mr. J. D. Flawn, for their help and invariable keenness.

Publications.

“Terminal Uraemia with Notes on the Prevalence of Renal Disease amongst the Insane.”—*Journal of Mental Science*, July, 1931.

“The British Medical Association Pathological Museum at Eastbourne.” (Article with photographs.)—*British Medical Journal*, September 19th, 1931.

“Exotoxins in relation to Vaccine Therapy.”—*British Medical Journal*, September 12th, 1931.

B.—The Treatment of Schizophrenia with Sulphur.—By Dr. P. C. COLLINGWOOD FENWICK.

Of the 30 male patients who have been treated with sulphur in the East Sussex County Mental Hospital and have completed the treatment, 11 have been discharged cured and have returned to their work, 8 have shown marked improvement and 11 have remained in the same mental state as before.

The social worker attached to this hospital has kept in touch with those that have been discharged, and so far they have shown no signs of relapse.

It is now over two years ago since the sulphur treatment was introduced into this hospital, and the results have been encouraging.

A few young women have been given a course of treatment, but they have shown no improvement at all.

In the cases which have been treated here, each has been given a series of 12 injections of sulphur in olive oil into the muscles of the thigh. The first dose has been 1 c.c. and the subsequent injections have been increased by 1 c.c. until the final dose has been 12 c.c. of a 1 per cent. solution. We have found that it is best to give the treatment in the evening so that the rise of temperature does not occur until the following morning, and the patient is not disturbed during the night by having his temperature recorded. In some cases rigors have followed with a rise of temperature to 105° F. The blood count has been taken in every patient, and in many the leucocytes have risen to over 70,000, but this has given no indication as to the ultimate prognosis.

The good results that have been obtained may to a certain extent be due to the very special care and attention that is given to each patient by the nursing staff whilst undergoing the course of treatment, as throughout they are encouraged to attend to their own needs and to occupy themselves when possible.

The Van den Bergh has been done in most of the cases by my colleague, Dr. Shera, and in every case it has shown to be negative, intimating that the sulphur has no destructive effect on the liver cells. One or two patients have stated during their course of treatment that they think the injections are doing them good but others have lain like logs during the whole six weeks and have only shown improvement when the course has been completed and when they have gradually departed from the world of phantasy into the world of reality.

XXXVIII.—FROM THE WILTS COUNTY MENTAL HOSPITAL,
DEVIZES.

Report on Laboratory Work.—By Dr. S. J. COLE, Medical Superintendent.

Laboratory Work.—In the autumn of 1930 a small bacteriological laboratory was fitted out to work in conjunction with the laboratory of the General Infirmary, Salisbury.

During the year 1931 the routine work consisted chiefly in the examination of faeces for pathogenic organisms.

The following is a summary of the work done :—

Bacteriological examinations of faeces, 1,160; agglutination reactions, 25. Bacilli isolated.—Members of paracolon group, 17; atypical bacillus coli, 17; dysentery bacilli, 14; *B. alkalescens*, 2; *B. faecalis alkaligenes*, 2; *B. Morgan*, No. 1, 1; *B. pyocyaneus*, 1; *B. typhosus*, 1; *B. coli anaerogenes*, 1.

Ten cases of dysentery occurred during the year and from all these a bacillus of the Flexner "X" group was isolated.

Nine cases of severe diarrhoea also occurred, and from five of these paracolon bacilli were isolated, and from the others atypical *b. coli*.

Four carriers of the dysentery bacilli and one carrier of *B. typhosus* were detected.

A vaccine has been made from the dysentery bacilli isolated, to be used for prophylactic work.

Other examinations :—Sputa for tubercle bacilli, 33 ; blood counts, 16 ; Langes colloidal Gold tests, 7 ; urines, chemical and bacteriological, 5.

XXXIX.—FROM THE NORTH RIDING MENTAL HOSPITAL, YORK.

Pathological Report.—By Dr. W. FRASER, B.Sc., D.P.M., Deputy Medical Superintendent.

The following is a summary of the investigations carried out in the laboratory during 1931 :—

Urine examinations.—Routine chemical, 1,032 ; bacteriological, 6. Faeces.—Examinations for *B. typhosus* and *B. dysenteriae*, 5,297. Blood.—Agglutination tests for enteric and dysenteric group, 746 ; Meinicke (M.R.) reactions, 95 ; blood counts and blood films, 52 ; Wassermann reactions, 17 ; cultures for presence of pathological organisms, 9. Sputum.—Examinations for presence of T.B. and other pathological organisms, 40. Throat swabs.—Examinations for presence of *B. diphtheriae*, 10. C.s.f.—Cell counts, albumin tests, Meinicke (M.R.), Wassermanns, etc., 25. P.M. Tissues.—Bacteriological and histological examinations, 136. Water and Milk.—Chemical and bacteriological analysis, 34. Post-mortem examinations numbered, 61.

XL.—FROM THE BRISTOL MENTAL HOSPITAL.

General Report.—By Dr. E. BARTON WHITE, Medical Superintendent.

A.—*Special Investigations.*

(1) *Malarial Treatment of General Paralysis.*

During the year 8 males and 2 females suffering from this disease have been submitted to malarial treatment. This makes a total series of 33 cases, which form the subject matter of a communication to be presented at the April meeting of the Royal Medico-Psychological Association held at this hospital. No case treated less than six months ago has been included, so that sufficient time has elapsed to make a fair assessment of improvement or otherwise. The results of the treatment may be summarized as follows :—

			Males.	Females.	Total.
			—	—	—
(i) Died after treatment	...		10	1	11
(ii) No change	...	...	5	2	7
(iii) Improved	...	...	6	4	10
(iv) Discharged	...	...	2	3	5
					—
					33
					—

Summary.—Definite improvement has been established in 15 cases or 45 per cent. of the total series. Of these 5 were allowed their discharge, and both the males are at home in normal occupation, after 14 months and 3 months respectively. Of the three females discharged, two are well and doing normal duties after 15 and 6 months respectively ; the other relapsed and was readmitted 5 months ago, after 15 months' liberty, and is now in an exalted mental condition but physically showing little sign of degeneration.

The 10 improved cases still under observation in hospital are in useful occupation in the wards, and at least three of the men are almost in a fit condition to be discharged.

In the no change group also, the clinical arrest of the disease may fairly be attributed to the malarial treatment, although actual improvement has not been noted. It appears certain that some at least of these cases would not have survived up to the present in the absence of treatment. In this group the patients are still able to look after themselves, and in several cases can engage in light occupation in the wards. The average time since treatment in this group is 18 months.

Eleven cases, or 35 per cent. of the total, have died at various intervals of time after treatment. It is interesting that 5 of the deaths occurred in cases where symptoms had been present for only a short time (up to 3 months) before treatment was instituted. This is noteworthy having regard to the generally accepted view that cases treated early in the disease have the best chance of recovery. The average pre-malarial duration of the disease in the fatal group was 9 months.

The general conclusions arrived at are very definitely in favour of malarial therapy in general paralysis. No suggestion can at present be made as to the *modus operandi* by the induced infection; a histological investigation of brains from cases which have died after treatment is in progress at the moment.

(2) *Investigation of a Case of Pellagra.*

A case of pellagra (the third occurring at the hospital within five years) has been the subject of investigation and the findings are to be communicated at the April meeting of the R.M.P.A.

The patient was a woman of 29, admitted in 1928 for delusional insanity. In July, 1931, the condition started with characteristic skin eruption, followed by chronic diarrhoea and wasting, and sensory and motor disturbances. Death occurred two months after the onset. Investigation of the post-mortem material showed atrophic changes in the intestine (both large and small), and evidence of subacute combined degeneration of the spinal cord. An account of the case with discussion is being prepared for publication.

B.—*Routine Laboratory Work.*

The following examinations were made during the year:—

Urine examinations, 1,347. Blood examinations: serological, 295; chemical, 19; counts, and film examinations, 37. Histological examinations, 24. Bacteriological examinations: faeces, 86; sputum, 33; swabs, etc., 3. C.s.f. examinations, 58.

NOTES.

Urine examinations for abnormal chemical and cellular constituents are made on all new admissions and periodically throughout the year. The figure given includes also special quantitative sugar examinations for the control of treatment in diabetic patients.

Blood examinations. The Wassermann reaction is done as routine on all new admissions, and is used as a control in positive cases during treatment. Widal reactions are occasionally asked for.

The *chemical* examinations include quantitative blood sugar and urea estimations in diabetic and nephritic cases respectively. Blood counts (differential where requested) are performed in cases of suspected anaemia, and numerous film examinations have been made, chiefly in respect of the malarial treatment of g.p.i. for the control of the febrile attacks.

The histological examinations have been made on material from post-mortem, in cases where confirmation of the anatomical diagnosis has been thought desirable. The paraffin method is adopted as routine.

Bacteriological examinations have been made on 86 specimens of faeces, in 20 cases where there has been the slightest suspicion of dysenteric infection. The vast majority of these have been simple diarrhoeas with

negative findings on repeated examination. Of the five cases notified as dysentery during the year, one (fatal) was a Sonne infection and one (recovery) yielded a typical strain of Flexner's bacillus. The other three (recoveries) were notified on clinical grounds and cultures were repeatedly negative.

Thirty-three have been examined for tubercle bacilli and by culture ; the remainder were miscellaneous examinations of pus swabs from various sites.

Cerebro-spinal fluid examinations. In all cases showing a positive Wassermann reaction on admission the cerebro-spinal fluid has been completely investigated, both before and after treatment. The examination has included Wassermann reaction, cell count, total protein, globulin and chloride estimations and Lange curve. The data so obtained are being used in the malaria research summarized above.

XLI.—FROM THE CROYDON BOROUGH MENTAL HOSPITAL.

Report of Laboratory Investigations.—By Dr. H. M. BERNCASTLE, Medical Superintendent, and Dr. T. P. REES, M.R.C.P., D.P.M.

The following is a summary of the laboratory investigations carried out during 1931 :—

Bacteriological.—Sputa : Examinations for tubercle bacilli were carried out on 34 cases. The low incidence of tuberculosis in the hospital is shown by the fact that positive findings were only reported in two cases, in one of these active tuberculosis was present on admission. Faeces : Examinations for non-lactose fermentors were carried out in 34 cases. On no occasion were organisms of the typhoid paratyphoid or dysentery group found. Throat swabs : Examination for the diphtheria bacillus (Klebs-Loeffler) in 4 cases proved negative. Pus : Examinations by film and culture, 27. Urine : Examinations by film and culture, 130. Unclassified (pleural effusions, etc.), 6.

Biochemical.—Blood urea estimations, 12 ; urea concentration tests, 6 ; routine urine examinations, 457.

Serological examinations.—Kahn's test for syphilis, 36 ; Widal reactions, 16.

Histological examinations.—Pathological sections cut, 120.

XLII.—FROM THE DERBY BOROUGH MENTAL HOSPITAL.

Report of Pathological and Clinical Investigations.—By Dr. JOHN BAIN, M.A., Medical Superintendent, and Dr. F. H. HEALEY, D.P.M.

A.—Pathological and Biochemical.

During the year 1931, 1,358 examinations were made, this being just more than treble the number of examinations for 1930. The laboratory was established towards the end of 1929, and during 1930 the apparatus was gradually collected ; thus 1931 was the first effective working year. Research work was somewhat embarrassed by the changes in medical staff. The laboratory is now proving of the utmost value in the diagnosis and treatment of physical disorder in the new admissions.

Summary of examinations.

Urines.—Routine, 401 ; special, including bacteriological, diastatic index and urea concentration tests, 182. Faeces.—Bacteriological, 30 ; special reactions, 12. Blood.—Total counts, 40 ; differential, 18 ; malarial films, 51 ; sugar estimations, 19 ; sugar tolerance curves, 51 ; urea estimations, 43 ; non-protein nitrogen, 12 ; creatinine content, 22 ; cholesterol content, 24 ; Van den Berg reaction, 55, Widal reaction, 52 ; sedimentation rate, 6. Blood sera for Kahn reaction, 107. C.s.f. complete examinations, i.e., cell count, protein content, colloidal gold curve sugar content, Kahn test, 71. Bacteriological swabs and cultures, 44. Sputum examinations, 23. Post-mortem examinations, 29 (i.e., 88 per cent. of deaths). Organs cut and stained, 87. Organs mounted for museum, 24.

B.—Clinical.

1. *Blood Sugar Estimations.* By Dr. R. STRÖM-OLSEN, D.P.M.—The blood sugar curve and the hyperglycaemic index of McCowan and Quastel have been studied in a group of mixed mental cases, chiefly new admissions. At first the Hagedorn micro-method of sugar determination was used, but this was superseded by the Folin-Wu's colorimetric method. The effect of the administration of endocrine extracts on the sugar curves was observed, and an attempt made to correlate sugar curves of a particular type with types of mental disorder. The summary notes the difficulty of assessing the value of the curve in relation to the type of mental disturbance and is as follows:—"The interpretation of glucose tolerance tests in mental patients is one of great complexity and in each case several factors may require to be taken into consideration. From the results in this series of tests, it appears that under-nutrition *per se* plays an important part in the production of a high hyperglycaemic index, and due allowance must be made when dealing with emaciated new cases. Generalized organic disease, as marked cardiovascular degeneration, and renal and hepatic insufficiency, have a marked effect on the sugar curves and even more pronounced is the effect of endocrine disturbances, physiological and psychological states at the time of the test." (Paper published in *The Lancet*, Vol. I, 1932, p. 128, by Ström-Olsen.)

The work is being continued on the new admissions and further observations will be recorded.

2. *Kahn Test.*—This precipitation test has now been adopted as the routine investigation for the evidence of syphilis in the blood sera of new admissions. 107 sera were examined, 3 males and 2 females giving a positive reaction.

Number of male admissions, 51; number of female admissions, 64. Hence percentage of syphilis is 5·8 in the males and 3·24 in the females.

In the examination of cerebro-spinal fluids, the cell count, protein estimation, acetic anhydride test and gold curve are performed and the diagnosis is then made on these findings. The fresh presumptive Kahn test as described in the League of Nation's Report of the Second Laboratory Conference on the Serodiagnosis of Syphilis, is then used, as a check on the previous findings. Several cases have been found where syphilis was ruled out by the first set of factors, but the Kahn test gave a positive reaction. These positives have been disregarded in the light of clinical evidence, and the Kahn test on cerebro-spinal fluid is not regarded as thoroughly reliable.

3. *Treatment of General Paralysis.*—The sulfosin method of producing pyrexia has been abandoned in favour of the induced malarial method. 2 males and 2 females have been inoculated with blood containing benign tertian malarial parasites. Following the rigors courses of novarsenobillon and tryparsamide have been given. No case has recovered mentally, sufficiently to be discharged, but the physical state has improved and this renders the nursing of the chronic general paralytic much easier.

4. *Treatment of Post-Encephalitic Cases.*—Two female cases and 1 male case have been treated by induced malaria but no marked mental benefit has resulted. In November, hyoscine treatment was displaced in favour of intensive stramonium treatment as advocated by Worster-Drought in *Lancet*, 1930, Vol. I, 1225. Tincture of stramonium has been used up to doses of 20 or 30 minims three times daily, and more benefit has accrued to the patient both mentally and physically than was obtained with hyoscine. In 3 female cases of Parkinsonism, a course of intravenous injections of Crookes Collosol iodine, 0·8 per cent. is being given, 10 weekly doses of 10 c.c. each. This method has been adopted from Professor Von Economo's recent book on encephalitis lethargica. The statement is made that intravenous treatment with iodine in large doses is the outstanding treatment in acute encephalitis lethargica, and as it is a progressive chronic encephalitis, every case of Parkinsonism that has not had

the intensive iodine treatment should be treated as an acute case. He states that by this means the chronic smouldering infection in the mid-brain region and basal ganglia can be checked. No effort should be spared to relieve the misery of these most unfortunate cases.

5. *Dementia praecox*.—Three female cases of this disease have received a course of rigors by inoculation with blood containing the benign tertian malarial parasite. This has been followed by a course of tryparsamide to guard against malarial relapse and as a general tonic. One case has improved since the treatment and is now beginning to work.

6. *Blood Conditions. Pernicious Anemia*.—Attention has been drawn to the not infrequent occurrence of mental disorder in association with pernicious anaemia by N. R. Phillips in a paper in the *Journal of Mental Science* in July, 1931. This author noted that the commonly associated mental disturbance was of the toxic confusional type. The following case is of this type and was admitted to the Derby Borough Mental Hospital in June, 1931.

J.H.P., male, 57, a case of acute confusional insanity with non-systematized delusions and with hallucinations of hearing. Weakness of the legs had been observed for about 6 months and a well-marked subacute combined degeneration of the cord was found, with complete inability to stand or walk. The blood picture of pernicious anaemia was found, viz., Red cells 1,760,000 Hb. 52 per cent. c.i. 1.3 Whites 5,600. Film of blood showed nucleated reds, microcytes and megalocytes, with much granular degeneration of reds. Fractional gastric analysis showed absence of hydrochloric acid. Treatment was at once begun, alternating courses of Armour's Liver Extract and Ventriculin being given with hydrochloric acid before meals. The blood condition has gradually improved and *pari passu* the mental symptoms have abated. There has been no change in the reflexes but with re-education and massage, made possible by the mental improvement and resulting co-operation of the patient, walking with sticks is now possible. The blood picture is now reds 5,560,000 Hb. 87 per cent. c.i. .71 whites 5,400. Film. No nucleated reds. Some poikilocytosis.

The points of interest are that pernicious anaemia was not diagnosed previous to the onset of acute confusion and the admission to a mental hospital, and the vigorous response, mental and haematological to the specific therapy.

7. *Neuropathology*.—Two interesting brain conditions were encountered during the year, and we have been fortunate in obtaining the help of Dr. E. Weston Hurst of the Lister Institute, London, in the elucidation of the first case.

(a) *Symmetrical bilateral calcification of brain.*

F.W. was admitted in 1908 and died in 1931, being then aged 42. Had suffered from birth with chronic choreiform movements in arms and legs and was a case of imbecility with melancholia. Death took place from respiratory disease and at autopsy, hard plaques of calcification were found in both lenticular nuclei, both caudate nuclei, both thalami, and in the white matter of the centrum ovale. Also present in both dentate nuclei of cerebellum.

Such extensive calcification in the brain is rare and it is intended to publish full notes of the case.

(b) *Right frontal glioma.*

E.R., female, 38, admitted September, 1930, as case of acute confusional insanity. There was a history of headaches and rheumatism, and a series of epileptiform fits occurred just previous to admission. The blood serum gave a + Kahn reaction, and the patient had a marasmic child evidently suffering from congenital lues. The c.s.f. was under pressure but showed no abnormal constituents. Further attacks of epileptiform fits occurred, optic neuritis developed and cerebral tumour was diagnosed. There were no localizing signs, but at autopsy an infiltrating tumour was found in the right frontal lobe. Microscopically it was found to be an astrocytoma.

Cerebral tumours are rare in mental hospital work and this case will be published with a series of 5 others, seen in the last 5 years by Dr. Healey.

C.—*Out-Patient Department.*

A psychiatric out-patient clinic was established in September, 1931, at the Derbyshire Royal Infirmary and is staffed by Dr. J. Bain, Medical Superintendent of the Borough Mental Hospital, and Dr. E. L. Hopkins, Medical Superintendent of the County Mental Hospital. It is as yet too early to report on the work done.

XLIII.—FROM THE LEICESTER CITY MENTAL HOSPITAL.

Laboratory Report.—By Dr. T. WISHART DAVIDSON, D.P.M., Pathologist, and Dr. J. D. W. PEARCE, D.P.M., Assistant Pathologist.

Routine investigations during the year 1931 were as follows :—

Bacteriological examination of—Faeces, 1,723 ; urine, 45 ; blood, 4 ; pus and exudates, 63. Blood sugar, urea, calcium, urea concentration tests, Lange tests, gastric analysis, benzidine tests, 280. Widal's, 74. Wassermann reaction of—Blood, 322 ; c.s.f., 51. Vernes tests of blood for syphilis, 320. Blood films for malaria parasites, 666. Urine examinations—routine, 976. Autopsies, 96 per cent. of total deaths, 72.

Wassermann Reaction (M.R.C. No. 1. Wyler Modification).—Of the 182 patients admitted during the year, blood from 150 was examined ; 32 patients were not submitted to the test as 22 were re-admissions and known negatives, whilst 10 died or were discharged shortly after admission. Of the 95 females tested, 7 (7·3 per cent.) gave a positive reaction, and of the 55 males, 11 (20 per cent.) were positive.

The incidence rate for syphilis of the 150 patients tested was 12 per cent. General paralysis was diagnosed in 8 males and 1 female.

Syphilimetric Test of Vernes.—The blood from 150 admissions was tested by the Photometric method of Vernes, and the results compared with the Wassermann test carried out on the same specimens of blood serum. Only in one case, a known syphilitic, was there a discrepancy, the Wassermann being positive and the Vernes test negative.

In addition, the Vernes test was carried out on 170 specimens of serum obtained from patients undergoing courses of anti-syphilitic treatment, and the effect of the drug exhibited was gauged by a rise or fall in the Vernes optic density reading.

The value of the Vernes method in comparison with the Wassermann test is still being investigated, and will be reported upon later.

Malaria Treatment of General Paralysis.—Malaria therapy continues to be applied to all paralytics considered suitable. Eight males and one female were infected by blood inoculation during the year, 3 patients were discharged as “recovered” and 1 as “relieved” ; 2 died and 3 remained unimproved. Intensive courses of anti-syphilitic treatment by means of sulfarsenol, novarsenobillon and bismuth were given to each patient following the malarial treatment.

It is of interest to record that of the discharged patients two were voluntary patients.

The results up to date of the malarial treatment which was commenced in 1924, are as follows :—

							Per cent.
Deaths, unassociated with malaria	...	...	...	...	...	35	39·8
Deaths, associated with malaria	...	...	...	...	...	8	9·1
Unimproved	...	...	...	...	...	17	19·3
Improved	...	...	...	...	...	4	4·5
Discharged	...	...	...	...	...	24	27·3
Total						88	

Included in the number of deaths are 5 patients who were discharged following treatment, but who later relapsed and were readmitted.

Dysentery.—The outbreak of dysentery due to B. dys. Flexner "Z", which commenced on the female division in October, 1930, continued during 1931, cases appearing at irregular intervals in various wards up to June.

As stated in the previous report, prophylactic vaccination of 570 patients by means of autogenous vaccine of B. dys. Flexner "Z" in two doses, 1,000 and 2,000 million bacilli at intervals of 10 days, was effected but 34 patients developed clinical dysentery, and 12 excreted the organism without showing clinical signs. In 17 instances dysentery developed between one and three months following the prophylactic inoculation.

Sonnés bacillus was found in 3 female cases which developed during the summer.

On the male division during April and May 6 cases of dysentery due to Flexner "Z" occurred, and during the consequent search for a source of infection 6 carriers were found. Again, during October, November and December there were 10 cases due to B. dys. Flexner "Y", and one carrier was found.

Typhoid.

One case of typhoid occurred during the year. It is of considerable interest that the causal organism was found to be of the "O" strain.

A.M.S., female, age 69 years, a feeble, senile dement, ran an irregular intermittent fever, commencing on November 15th. Stools were relaxed and foul from the 23rd, but B. coli only was isolated on culture. Dysentery was suspected. On December 1st, a non-motile, non-agglutinating "dysentery" bacillus was isolated from the faeces. By December 5th the fever was definitely of the "staircase" type, so a blood count and Widal were done, the leucocytes being found to be 6,000 per c.mm. and the Widal $\frac{1}{1000}$, typhosus "H", $\frac{1}{500}$, typhosus "O", $\frac{1}{25}$, Dys. Flexner V.W.Y., and $\frac{1}{250}$ Flexner Z. The non-agglutinating "dysentery" organism of December 1st was again examined, and was found to be agglutinated to a dilution of $\frac{1}{25}$ by typhosus "H," and to $\frac{1}{50}$ by typhosus "O" serum. The patient died on December 8, and at autopsy small typhoid ulcers were found in the ileum and colon. B. typhosus "O" was cultured from the small bowel, the spleen, and the gall-bladder.

Out-Patient Clinic.—A "Clinic for Nervous Ailments" was opened on March 12th, 1931, at "Tower House," the house lately occupied by the Medical Superintendent. The clinic is held on Thursdays, from 2 to 4 p.m.

The local practitioners were circularized, and informed that recommended patients could be seen for a consultative opinion and treatment. Thirty-one patients were recommended and 112 attendances recorded. Two patients reported at the clinic whilst on "trial leave" from the hospital, and two attended for anti-syphilitic treatment following discharge.

The 31 cases seen have been classified as follows:—Psychoneuroses, 10; schizophrenia, 6; manic depressive and presenile psychoses, 6; chronic delusional psychoses, 2; post encephalitis, 2; general paralysis, 2; epilepsy, 1; cerebral tumour, 1; mental deficiency, 1. Fifteen patients were admitted from the clinic to the hospital under the voluntary system for further treatment.

Judging by its success so far, the out-patient clinic has proved to be a very valuable adjunct to mental hospital activities.

XLIV.—FROM THE CITY OF LONDON MENTAL HOSPITAL.

Laboratory Report.—By Dr. W. ROBINSON, D.P.M., Medical Superintendent.

The following is a summary of the routine laboratory work carried out during the year 1931:—

Analyses of urines, 1,026; with quantitative tests, 45. Blood examinations, 12. Blood sugars, 2. C.s.f., 8. Examination of faeces and urines for bacilli typhoid, 350. Agglutination tests, 42. Examinations of sputums, 8. Examination of swabs, 12.

XLV.—FROM THE NEWCASTLE CITY MENTAL HOSPITAL.

Laboratory Report.—By Dr. H. D. MacPhail, O.B.E., Medical Superintendent.

The following is a summary of the routine laboratory examinations carried out during the year :—

Examinations of urine, 260 ; of sputum, 16. Bacteriological examinations of faeces, 19. Microscopic examinations of blood, 360. Widal reactions (complete), enteric, dysentery, etc., 38. Wassermann reactions : Blood, 54 ; c.s.f., 54. Accessory examinations to Wassermann (Ross Jones, etc.), 150. Colloidal gold reactions, 40. Bacteriological examinations of c.s.f. pus, etc., 23.

XLVI.—FROM THE NEWPORT MENTAL HOSPITAL.

Report of Clinical and Pathological Investigations.—By Dr. M. R. Mackay, M.C., Medical Superintendent.

Clinical Investigations.

General Paralysis of the Insane.—The malarial treatment of general paralysis of the insane was continued, four cases were treated all showing marked improvement. They were discharged and up to the time of report doing well. Tryparsamide treatment was undertaken in conjunction with malaria.

Dementia Praecox.—A series of cases of dementia praecox were put on a liver diet ($\frac{1}{2}$ lb. lightly cooked liver per day) for a month or longer. The general findings were :—(1) Physically they all showed improvement, increase in weight, etc. (2) Mentally no improvement was noticed.

Another series of cases of dementia praecox were given intramuscular injections of sulphosin, 1 c.c. to 10 c.c. twice weekly. No improvement of any sort could be detected in these patients.

In our series it was found that from 3 c.c. to 5 c.c. gave the maximum rise of temperature. In one case 3 c.c. produced a rigor with a temperature of 104°, while 10 c.c. produced very little rise of temperature.

Pathological Investigations.

A summary of the pathological examinations carried out during 1931 is appended :—

Urine.—Routine chemical examinations, 108. Blood.—Differential counts, 6 ; total cell counts, 4 ; malarial parasites, 4 ; Widal, 1 (at county laboratory) ; Wassermann reactions, 14 (at county laboratory). C.s.f.—Ross Jones test, 2 ; Nonne Apelt, 2 ; Wassermann reactions, 4 (at county laboratory) ; estimation of protein, globulin, cell counts and colloidal gold tests, 9 (at county laboratory). Bacteriological.—Examination of sputum, 7 ; throat swabs, 2 (at county laboratory) ; blood, 4. Autopsies, 21 (70 per cent. of total deaths).

XLVII.—FROM THE NOTTINGHAM CITY MENTAL HOSPITAL.

General Report.—By Dr. G. L. Brunton, Medical Superintendent.

Routine Laboratory Work.

Urine examinations, 1,210 ; sputa, 30 ; malarial slides, 267 ; occult blood, 3 ; complete blood, 14 ; c.s.f.: colloidal gold, 26 ; globulin, 24 ; protein content, 15 ; blood : non-protein nitrogen, 101 ; sugar, 7 ; milk analyses, 33.

Special Examinations.

Glucose tolerance tests, 111 ; carbon dioxide capacity of plasma, 58 ; calcium content of serum, 89 ; blood cholesterol, 17 ; proteose content of urine, 29.

Publication.

The Glucose Tolerance Curve in Epilepsy, by G. W. J. Mackey and H. BARBASH (*Journ. Ment. Science*, 1931).

A series of 66 patients was investigated. The conclusion was drawn that a high percentage of epileptic patients have a definitely subnormal glucose tolerance curve, but no correlation was found possible between type of epileptic and blood sugar level. No definite relationship could be detected between frequency of fits and blood sugar level. After a fit there was a temporary fall in the blood sugar followed by some degree of recovery.

XLVIII.—FROM THE PLYMOUTH BOROUGH MENTAL HOSPITAL.

Pyrexial Treatment of G.P.I. with Sulfosin Leo.—By Dr. J. H. R. LAPTAIN.

The twelve successive cases in which this treatment was undertaken were all in an advanced stage of the disease and the diagnosis in each case had been confirmed by examination of blood and cerebro-spinal fluid; the clinical symptoms were well-marked.

The conclusions arrived at are that treatment with sulfosin is eminently suitable in advanced cases because of its harmless effect, especially on a degenerate myocardium. The facility of regulating the temperatures and of procuring the material widens the scope of the treatment, while the results obtained compare very favourably with statistics of induced malarial pyrexia.

(*The Lancet*, March 21st, 1931.)

XLIX.—FROM THE SUNDERLAND BOROUGH MENTAL HOSPITAL.

Laboratory Report.—By Dr. M. A. ARCHDALE, D.P.M., Medical Superintendent.

The following is a summary of routine laboratory work carried out during the year :—

Urines (chemical and microscopical), 250; blood films, 38; blood counts, 6; sputa, 17; c.s.f.s., 19; pleural fluids, 2; faeces, 7; colloidal gold tests, 4; gastric analyses, 2; pus, 2; occult blood tests, 3; post-mortems, 27 (75 per cent. of deaths).

L.—FROM THE BARNWOOD HOUSE HOSPITAL, GLOUCESTER.

General Report.—By Dr. J. K. C. LIDDELL, Assistant Medical Officer.

Dementia praecox.—Two female cases were treated with sulfosin. In each case the maximum rise in temperature was obtained with 6 c.c., and further increases in the dose produced lower temperatures. In neither case has any improvement in the mental condition resulted.

General Paralysis of the Insane.—One male case was treated with malaria, followed by a course of injections of acetylarsan, and was later discharged recovered.

Focal Sepsis.—Eleven cases were investigated by Dr. Davey, employing the pathogen-selective technique, and vaccines were prepared in five of these cases.

Actino-Therapy.—Continues to be used for tonic purposes.

LI.—FROM ST. ANDREWS' HOSPITAL, NORTHAMPTON.

General Report.—By Dr. D. F. RAMBAUT, Medical Superintendent.

During 1931 the routine and clinical research work at the Reception Hospital, Wantage House, has been maintained on similar lines to that of the preceding years. Most of the main departments show an increase in the amount of work carried out, this applying especially to the laboratories where the elaboration of research due to advance in methods entails increased time being spent in the investigation of many of the cases admitted. The study of the application of therapeutics based on the findings in the cases subjected to systematic investigation and research has continued satisfactorily and several promising avenues of approach are being followed, especially regarding less empirical methods. Such work is necessarily laborious as it involves much time and study by clinical and laboratory investigation, both before, during and after treatment; and, in some, a considerable interval must elapse before determining the value and permanency of the measures taken. In the past four years the continued researches into bacteriological and toxicological aspects of mental disorder emphasizes more clearly that a search for, and the discovery of, some series of more or less specific antigens or anti-neurotropic sera are required. Progress on these lines is being made by several methods of laboratory and animal experiment.

The total number of patients admitted to Wantage House was 42, or 11 more than last year. In nearly all cases a complete diagnostic survey has been carried out. In addition to the work of the various diagnostic and treatment departments for those resident in Wantage House, a substantial amount of both investigation and treatment has been undertaken during the past twelve months for patients in the main hospital and annexes. Examinations, 307 in number, were made in 55 patients, a number of whom were enabled to have special treatment indicated by the findings.

Of the voluntary and certified patients who have received the full investigation and course of treatment, just under 40 per cent. of the gentlemen have recovered and 47 per cent. of the ladies. In addition to these, 9 patients, or 21 per cent., were relieved, 6 of whom were sufficiently well to return home. In considering these figures it is as well to add that, for the purposes of research, it has been necessary to include in the admissions a certain proportion of cases in whom the prognosis was unfavourable, either because of the type of their disorder or its duration.

A.—Hydrotherapy Department.

The functions of this department have been, as in previous years, fully utilized and hydrotherapy continues to be the treatment of choice in the majority of new admissions. The observations regarding the recognition and treatment of chronic intestinal stasis in its various forms continue to substantiate the views held regarding the high proportion of admissions suffering from functional or static lesions of the colon.

In the past year the value of combining colon irrigation with the use of antiseptics, adsorbents, and antispasmodics has been very definite and, in many, indispensable. Varying degrees of catarrhal conditions are to be found associated with such stasis, from the mild type showing small mucus shreds to that of the fully developed membranous or mucomembranous colitis. It has further been noted in cases where there is a periodicity in the mental state, that, during the exacerbation, stasis recurs and it is later usually possible to observe evidence of greater or less degree of catarrhal inflammation, the condition sometimes developing into a typical but short-lived colitis. As this state of affairs clears up there is

often a corresponding amelioration in the mental symptoms. These observations have been combined with a study of the changes in the intestinal flora, especially regarding the incidence of the anaerobic bacterial content. Correlation of such data has proved interesting but has not progressed sufficiently for definite statements to be made. There is, however, some relationship between the numbers and viability of the anaerobic bowel flora especially and the state of the colon during and after the exacerbations in the mental picture.

The bath treatments, either of the sedative athermic prolonged type or the short hyperthermic stimulative immersion, continue to hold a very definite place for most of the cases admitted and are established as a routine. Later, the sprays and douches are found to answer and have a value as a stimulant to the nervous system.

The Turkish Bath department is likewise being more and more recognized as dealing effectively with many cases, especially melancholiacs. In not a few unexpectedly rapid relief of the mental symptoms, with, later, a good recovery, can alone be attributed to a long course of twice-weekly Turkish baths.

B.—*The Laboratories.*

By Dr. W. M. FORD ROBERTSON, Pathologist, Bacteriologist, and Biochemist, and Mr. C. WEBB, Assistant.

During the year the total number of examinations for all laboratory departments has been 1,822.

1. *The Biochemical Department.*—During the past twelve months 1,602 examinations have been made and are summarized as follows:—

Blood.—Non-protein nitrogen, 81 examinations; serum calcium, 105; phosphates, 85; Van den Bergh, 89; CO₂ (Van Slyke), 96; uric acid, 1; urea concentration test, 2.

Blood counts.—Estimation of red cells, leucocytes and differential, haemoglobin by Tallqvist's colour scale and the Meischer colorimetric method, 117. Estimation of leucocytes, total and differential, 197, of these, in 108 the Schilling Index was estimated and 17 patients assessed by a special method for leucogenic activity.

Glucose tolerance tests.—Blood sugar curve estimated on 8 readings, including fasting blood (MacLean's method), 33.

Fractional test meal.—On a standard oatmeal gruel: quantitative estimation of free and combined hydrochloric acid and chlorides in resting-juice and seven samples up to two hours. Estimation of pepsin in resting-juice and one hour sample. Qualitative estimation for blood, bile, starch, mucus and lactic acid. Microscopic examination of resting juice for evidence of abnormal cytology. Cultures of three samples of resting-juice, one plated immediately, the others kept at room temperature and 37 C. respectively for 24 hours and then re-cultured to test bactericidal power, 37.

Fractional gastric test by histamine method.—Gastric content, 4.

Cerebro-spinal fluid.—Manometer pressure, urea, chlorides, sugar, colloidal gold, proteins and cell count, 24.

Urine.—24-hour measured sample. Qualitative and quantitative examinations and C.D., 485. Single samples for qualitative only, 70. Urea concentration, 2.

Stools.—Estimation of soluble mucus, stercobilin, occult blood, assimilation, and smears for bacterial content, 96.

Pathological material.—Sections, 10.

Wassermann reaction.—Number of sera examined, 25; c.s.f., 22.

2. *The Bacteriological Department.*—The total number of bacteriological examinations carried out were 220, as follows:—

Tonsillar material or throat swabs, 20; sputum, 2; dental, 19; accessory sinus washings, 4; nasal, 3; resting-juice, 36; pus, 7; urine, 17; faecal, 176; cervix, 11; eye, 2; c.s.f., 23.

Autogenous vaccine preparation, 28, as follows:—

Dental, 1; tonsil, 4; resting-juice, 3; pus, 2; intestinal, 12; cervix, 2; accessory sinuses, 2; urine, 4; sputum, 1.

The main scheme of the diagnostic survey as initiated four years ago has been maintained, with, however, an intensification of research in anaerobic bacteriological methods and the study of blood cytology relative to the question of morbid changes in leucopoiesis bearing upon the chronic infections studied.

The total number of systematic laboratory examinations shows an increase and the amount of work undertaken has exceeded previous years.

(a) *Bacteriological Researches*.—The work during the year has been directed, apart from systematic routine examinations on each admission, mainly to studying the biochemical reactions of the anaerobic diphtheroid and leptothrix group in nine different fermentable substances and in ascertaining their ultimate reactions up to the tenth day of incubation and comparing these with the usual observations made on the fourth day. The results of these investigations have been of considerable interest and will, I believe, assist in defining more precisely the relationship between the anaerobes in question, the aerobic strains and the Klebs Loeffler Bacillus. Further, the aerophilic capacity of many primarily anaerobic strains has also been investigated and numerous virulence tests on experimental animals made. These and other relevant results it is hoped will be the subject of a paper in the future and will form both an amplification and substantiation of that already the subject of a thesis outlined in last year's report. This thesis will be published in the *Journal of Mental Science* of January, 1932. An electrically operated rotary vacuum pump has been added to the laboratory equipment for use in extracting the oxygen and gasses from the media for anaerobic cultural work.

(b) *Biochemistry and Haematology*.—The work on the biochemical side has continued on much the same lines but with more detailed investigation into the calcium and phosphate metabolism of all cases on admission, throughout their treatment and later on recovery or transfer. It has been observed in newly admitted cases, especially in those more definitely toxic, that low figures for these two salts tend to be found together. Estimation later also indicates a certain amount of parallelism when restoration occurs towards the normal range during recovery.

The effects of calcium and parathyroid therapy and of giving organic phosphates has been studied now for over three years; but, as the total number of cases in which such investigation was merited is still relatively small, an accurate assessment of the results is not as yet permissible. As a therapeutic measure, however, parathyroid given parenterally and calcium gluconate (Crooks) has proved in many cases, having defective calcium metabolism, to be of definite value. There are usually two most noticeable effects. Where cases clinically show calcium deficiency there is a rapid improvement in the general appearance, the integument and circulation, and often an increase in anabolism. If these somatic manifestations are combined with a restless, excited and confused state, often accompanied by indefinite hallucinations and delusions, the symptoms, in nearly every case, subside in the course of from three to four weeks. The sedative action upon the nervous system has sometimes been most striking, though in a few, for some reason not yet apparent, such therapy may prove ineffectual.

The investigation of haemopoietic function during the past year has been extended to studying more closely leucopoiesis with the object of obtaining evidence for or against morbid changes associated with the chronic anaerobic bacillary infections so prominent in the lower alimentary canal. In last year's report, reference to the presence of leucopenia and relative lymphocytosis occurring in many cases was made. The researches undertaken during the year have brought new light to bear upon this question and the results, so far, are most interesting and encouraging. Total and differential leucocyte counts numbering nearly 200 have been made and of these 108 were examined for the Schilling Index. In 17 cases a special method of leucocytic estimation has been

carried out which is proving most informative and it is now being adopted as a routine measure. These cases are being followed up with a view to ascertaining changes in their leucocyte response during exacerbations in the mental state and later on recovery.

The effect of certain substances specifically stimulating to leucogenesis is also being investigated. It is too early to have ascertained very positive facts, nevertheless this research bears out the statements previously made regarding what are considered important leucocytic changes of a pathological character directly bearing upon the bacteriological researches of the past six years.

The study of therapeutic immunization by means of stock and auto-genous vaccines continues. The policy of using the less reactive detoxicated preparations has been maintained and, in an increasing number, the autogenous detoxicated vaccine prepared from the intestinal anaerobic diphtheroid and leptothrix group of bacteria has been used with, in some cases, gratifying results.

C.—*The X-Ray Department.*

By Dr. W. M. FORD ROBERTSON and Mr. E. TRANMER.

The work of the department shows an increase from last year, 108 patients being examined for whom 284 radiographs were taken.

The radiographic investigation for disease of the accessory sinuses has been maintained and further advances made in the technical side. This has made it possible to study the state of the mucous membrane lining the sinuses in relation to possible pathological changes where the formation of gross exudative material does not occur. Evidence of thickened mucosa without such reaction but bearing infection, has been obtained radiologically, and confirmed by operation and bacteriological examination in two cases during the year. In another a polypoid ethmoiditis was diagnosed clinically and radiologically the sinuses involved showed themselves to be opaque, especially with the soft tissue technique.

Sixty-one patients have been examined for evidence of sinus disease, 10 for lung diagnosis, 4 for kidneys or gall bladder, and 3 by the bismuth meal or barium enema.

Twenty-nine patients had a complete series of dental radiographs taken.

D.—*The Electrical Department.*

The Electrical Department and subsequent reports by Dr. W. M. FORD ROBERTSON.

1. Artificial sunlight by the Mercury Vapour Lamp. Eight patients received on an average 7 general exposures.

2. Diathermy.—Eight patients were given this treatment, 2 of whom were suffering from chronic inflammatory pelvic conditions.

3. Radiant Heat (Dowsing Method).—This means of applying a special form of heat to the tissues has been tried in 4 cases, an average of 8 treatments being given. The results even in a few were satisfactory, relief being afforded and a mild but general perspiration induced with accelerated action of the cardio-vascular system.

E.—*Ear, Nose and Throat Department.*

(In collaboration with Dr. D. M. TUDOR.)

The various aspects of this work have been continued and during the course of the year 9 cases have been examined in consultation with Dr. G. BROUGHTON BARNES, F.R.C.S., Honorary Ear, Nose and Throat Surgeon to the Northampton General Hospital. Of these either clinical

or radiological diagnosis in three justified exploratory operations for accessory sinus infection. In one tonsillectomy was done and in another a malignant endothelioma involving the posterior pharynx was removed by diathermic cautery and subsequently treated at Guy's Hospital with deep X-Ray therapy.

Again only a small number of cases have been discovered with accessory sinus disease. In one the right sphenoid only was involved, in another the right sphenoid and right antrum, and in the third the right and left anterior ethmoids and the right antrum had an advanced polypoid condition of the mucous membrane.

The first case, a lady aged 58, was suffering from delusional insanity with well-marked auditory hallucinations and disordered conduct. Glaucoma was a feature of her case. There were no subjective symptoms relating to the sinus condition. On her first admission in January, 1931, radiographic appearances were negative. Three months later she was re-admitted on certificate, her mental state having become definitely worse. Re-examination by X-Rays showed the right sphenoidal sinus to be hazy, in size it was abnormally large as it extended down behind the maxillary antrum and came into relation with the alveolus of the maxilla. The maxillary antra were exceedingly small. Clinically there was mucus round the right sphenoidal ostium. Drainage was accomplished by removing a portion of the right middle turbinate and only mucus was obtained.

Cultures were taken from the initial washings of the sinus.

Bacteriological findings:—Aerobic culture, *staphylococcus pyogenes aureus*, few; *staphylococcus* (M.N.F.), few. Anaerobic culture, *streptococcus pyogenes*, two types both in small numbers.

Nasal cultures taken just prior to operation. Aerobic culture, *staphylococcus pyogenes albus*, few; *micrococcus tetragenous*, few; diphtheroid, few. Anaerobic culture, *staphylococcus pyogenes albus*, few.

It will be seen that on comparing the two series of cultures there is no correspondence and that the flora in the sinus bears organisms of a more definitely pathogenic character. Subsequent washing out of the sinus promoted a moderate muco-purulent reaction for about ten days. Radiographs taken some time after the cessation of the discharge showed marked improvement in the clearness of the sinus. Up to the present there has been no improvement in the patient's mental condition.

The second case, a lady aged 56, had a history of recurrent depression, the attacks tending to become more severe and of longer duration. The patient was first admitted in February, 1930, for general examination, being at the time in remission. The radiographic appearances of the sinus were negative. On her second admission in May, 1931, she was acutely depressed, the X-Rays showing slight haziness of the right antrum. There were negative findings clinically including transillumination. Shortly after admission a follicular tonsillitis developed and clinical examination on this occasion threw suspicion on the right sphenoid, the osteum being pouted and containing a large drop of muco-pus. The radiographs taken again during the acute tonsillar inflammation showed a slight general haziness of the whole right side, but insufficient to justify a diagnosis of a unilateral pan-sinusitis. Operation on the right sphenoid was advised on clinical grounds and on the right antrum on the radiological appearances. The operation was carried out on June 23rd, after the tonsillitis had subsided. Cultures were taken from both sinuses with special precautions against nasal contamination. Cultures from the right sphenoid yielded a sparse growth of a gram positive *Diplo-streptococcus* which fermented mannite, salicin and milk, but not lactose. It was the only organism isolated and would have been missed but for strict anaerobiosis in cultural technique. The right antrum, on aerobic culture, showed a few diphtheroid colonies, while anaerobic conditions of growth yielded a long chained *streptococcus pyogenes* and a gram positive *Diplo-streptococcus* similar to that isolated from the sphenoid.

Subsequent washings from both sinuses yielded a moderate purulent reaction, although no definite pus was found initially. The antrum proved to hold more occult infection than the sphenoid.

Improvement in this case was at first slow but after 5 months' treatment including inoculation with the autogenous streptococcus vaccine, recovery has been complete and satisfactory. It remains to be seen, however, whether this case will remain free from further attacks. In October, four months after the operation, radiographs showed that the right antrum was perfectly clear and comparison with the former pictures was favourable regarding the other sinuses, with, however, still some slight suspicion of haziness of both ethmoid regions.

From these two cases, as well as others examined and treated similarly in previous years, several points of interest have been ascertained regarding their clinical and radiological aspects. The main considerations are as follows :—

(1) Gross reactive changes in the mucous-membrane cannot often be anticipated in cases of mental disorder and, in place of frank pus, mucus or sometimes muco-pus in very small amount along with epithelial debris is found in association with varying degrees of hyperplasia. Thus, clinical findings in the nasal passages are often entirely lacking.

(2) The infections found in the accessory sinuses show they are very largely occult in character, the organisms isolated being in the main strict anaerobes.

(3) From this it is evident that there are many difficulties in establishing a sufficiently clear diagnosis of sinus infection to justify operation, either exploratory or more radical in nature.

(4) Success in the recognition of latent sinusitis is at present more dependent upon a high degree of radiological technique than subjective or objective clinical findings, although as case No. 2 shows, they may yield information of value and should never be neglected.

(5) Interpretation of the radiographs can only be accurately made stereoscopically and two techniques are required if the mucous membrane lining the sinuses is to be studied in any detail.

(6) In cases where the initial radiographs arouse only suspicion of sinus involvement and cannot be supported clinically, then opportunity should be taken of re-examination, especially if any definite change in the physical or mental condition occurs. If this precaution is taken confirmation of suspected trouble may be obtained.

(7) Post-operative sinus lavage has always resulted in the development of a pyogenic reaction from the mucous membrane, which may take from 10 to 21 days to clear up. This can be taken, I believe, as evidence of a normal reactive process which should have occurred had resistance been normal.

The following statistics covering the work of the past 4½ years are appended :—

Total number of patients examined	...	...	...	...	...	239
Number of cases operated on for suspected sinusitis	...	...	...	...	...	11
Number in whom operation for sinusitis was undertaken and condition confirmed	...	...	...	...	...	9
Percentage	...	...	...	...	...	3·7
Cases where sinus infection (antrum) was not confirmed at operation and after	...	...	...	...	...	1
Cases where old-standing inflammatory condition was found (antrum) but proved sterile and free from inflammation	...	...	...	...	...	1
Cases suspected of having sphenoidal infection but operation not undertaken	...	...	...	...	...	1
Total number of sinuses opened as follows :—						
Sphenoid, 4. Ethmoid, 1. Antrum, 8	...	...	...	...	...	13
Number of patients having involvement of antra only	...	...	...	...	...	6
Number of patients having involvement of sphenoid	...	...	...	...	...	3
Number of patients having involvement of sphenoid and antrum	...	...	...	...	...	1
Number of patients having involvement of ethmoid and antrum	...	...	...	...	...	1

F.—Pyrexial Treatment.

This line of non-specific stimulative therapy has been continued in only a small number of selected cases, the majority of whom have reacted well and have shown improvement. In some, where progress mentally has not been maintained, a short course of 2 or 3 further injections has been tried after a suitable interval, but without definite success, except in one in whom the change was remarkable. This case came under review regarding leucogenic activity and was one where the Schilling Index proved of much interest. Later a shift towards the normal was apparent after the mental and bodily health was established on a much higher level as the result of pyrexial treatment.

Further work on leucogenesis as influenced by pyrexial treatment is being undertaken and in time it is hoped that some rational basis will be established determining the suitability or otherwise of cases for such therapy.

New combinations of T.A.B. vaccine and other shock-producing substances, other than the sulphur element, are being tried. From experience the intramuscular route for most patients is greatly to be preferred as the negative phase, although lasting longer, is rendered much less severe and trying to the patient. The local reactions produced by the various compounds tried are much less marked than with the sulphur preparation and are, from the point of view of reactive effect, apparently no less efficient.

G.—Dental Department.

(In collaboration with Mr. F. A. HUSBANDS, L.D.S., Visiting Dental Surgeon.)

Eighteen fresh cases have come up for report during the year and 15 for re-examination, the latter being those coming under the scheme of systematic re-examination entailing inspection every four months after the completion of the initial treatment. The number of cavities found in several cases has certainly justified the new arrangement. The compressed air atomiser has been much in use as a routine method of clearing up superficial mouth sepsis, especially in recently admitted cases. In others, particularly those where extractions have been necessary, daily spraying of the sockets has greatly minimized after-sepsis, its attendant discomfort and toxic reaction.

The following shows details of the work done during the past twelve months :—

Fresh examinations, 18 ; re-treatment, 15 ; fillings, 152 ; scalings, 24 ; dressings, 14 ; provision of dentures, 13 ; extractions, 101 ; attention to dentures, 14 ; repairs, 4.

Twenty-nine patients had complete mouth radiographs taken.

The pursuance of dental X-Rays as a routine measure, along with Bite-Wing films for deep interstitial caries, has fully justified the small additional time and expense entailed. It is in keeping with modern dental practice, and particularly necessary in mental work where subjective symptomatology is difficult to obtain and much focal apical infection would continually escape detection.

Continued experience during the past four years in the interpretation of a large number of radiographs showing all grades of morbid changes make it necessary to emphasize that, unless great care is taken to obtain perfect technique combined with meticulous inspection of the films, a number of teeth will be overlooked that should be regarded as doubtful or definitely pathological. This applies more especially to the mesially situated, partially or almost completely hidden granuloma, and slight degrees of rarifying ostietis apparently unconnected with the root apex. Chronic periodontal inflammatory conditions are also likely to be overlooked, this condition becoming more important if, in association with it, are to be found small embryo granulomatous sacs.

H.—*Therapeutics in Mental Disorder.*

In last year's report the *raison d'être* of the diagnostic survey as applied to therapeutics was discussed and a summary given of the lines now adopted at Wantage House.

During this year very little departure from the measures referred to has been made. Modification has mainly been directed to simplifying, where possible, the combinations of medicinal therapy and in adding certain more specific lines of treatment judged to be necessary and effective only after considerable clinical study correlated with biochemical and haematological investigation. In the general survey there has been mentioned the necessity for the development of more specific methods of treatment. Supporting this view are the following chief considerations:—

(1) That the accumulation of data shows that in mental disorders special types of anaerobic bacteria are found, particularly those belonging to the diphtheroid and leptothrix group, many of which are closely allied to the bacillus of diphtheria.

(2) That the deep seated nature of the infection in the lower alimentary canal has to be recognized, together with its associated chronicity and the present somewhat inadequate means of counteracting such conditions.

(3) That there is a great tendency to the involvement of tissues and organs adenexial to the colon and a response in the gradual development of fibrositic reactions.

(4) That there is a strong probability that such infections are neurotropic in action and therefore more or less selective in effect upon all vital and trophic bodily functions.

(5) That from this fact and the observations made, especially more recently, upon leucogenic activity, it is indicated that there is, on the one hand, as a factor of importance, quiescence or subjugation of resistance, resulting in the establishment of high somatic tolerance to sub-lethal infection, and that there is, on the other hand, the frequently observed relative and absolute lymphocytosis pointing to some aberrant reaction to a specific group of toxins.

(6) That the deduction to be drawn from these two points is that a vital defensive (polymorphic) reaction is essential to the elimination of chronic focal infection having special toxic characteristics affecting both normal somatic and neuronc activity.

(7) That there is a marked sensitiveness of many patients with more or less specific reactivity to vaccine therapy, combined, in some, with an obvious lack of immunising capacity, especially in the more debilitated and severely toxic cases.

Further, that there is frequently a difficulty in gauging the optimum safe dose in many cases, more particularly those incapable of the necessary co-operation required in the study of focal reactions for the control of vaccine dosage.

From these few observations, arising out of an intricate biochemical immunological and toxological problem such as the majority of mental patients appear to present, it would seem only logical to seek for some specific method of not only relieving the whole economy from the continued toxic action of chronic infections, but also of stimulating the necessary leucogenic activity to a point where adequate repair can be begun and maintained. Further, that some means of freeing toxin already fixed in the central nervous system should be investigated, combined with measures to prevent further chemical fixation after this result has been wholly or partially achieved.

The time when this desideratum can be established is problematical, but investigation on these lines is being pushed forward stage by stage. Progress, however, is slow. The need for team work is obvious if the enormous range of carefully controlled research is to be covered adequately even in the course of a decade, but it is to be hoped that, as one of the

many etiological aspects of mental disorder, it will, in time, receive the attention of which I believe it to be worthy.

J.—*Note on the Treatment of General Paralysis.*—By Dr. D. J. O'CONNELL, D.P.M.

Four cases of general paralysis were treated during the year 1931 by tryparsamide and malariotherapy.

Two of these were voluntary patients, and both were of the depressed type of general paralysis. One has returned to business and the other will shortly do so. The remaining two were certified patients: one, an advanced grandiose case, has recovered and has been discharged from certificates, while the other, a very hallucinated case, who had previously been treated by malaria, is still under treatment, although much improved.

In each case a course of tryparsamide was given before and after the malariotherapy. The physical signs varied very little as the result of treatment, and the Wassermann reaction was not altered in the c.s.f.

K.—*Successful Control of Epileptic Fits.*

Mr. L., aged 72, a homicidal epileptic, first certified in 1900, owing to outbursts of epileptic furor. Epileptic fits date from boyhood.

Mental state.—Pronounced auditory hallucinations. Delusions of an exalted type—e.g., that he was in telepathic communication with the Board of Control: that he was in communication with the Deity by means of brain transference: that he was owed the sum of 390 million pounds by the Government for his detention; delusions of suspicion of his relatives and of those about him. He has always been intensely suspicious, restless, and extremely irritable. He has persistently declared that he did not have fits and has always refused to take any medicine. Attempts to treat his epilepsy by taking medicine in his food have resulted in outbursts of rage in which he has accused his attendants of poisoning his food. On occasions he has refused food for 24 hours or longer owing to his suspicions. There has been definite evidence of mental deterioration since he was first placed under control—very defective memory for recent events: most unreliable conduct: defective personal habits apart from the usual incontinence of fits.

Epileptic state.—Fits are of the true Grand Mal type.

In the following table, A, showing the annual incidence since 1915, fits are graded in two groups according to their severity.

TABLE A.

Year.	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1927	1928	1929	1930	1931
Number of major fits	49	47	49	44	29	29	30	27	17	11	25	22	27	24	22	14
Number of minor fits	361	284	366	365	421	537	421	403	448	427	318	607	780	869	938	89

During the quinquennium from 1915 to 1930 there has been a progressive decrease of major fits to practically half the number shown in 1915, while the minor fits have been trebled until 1930. In 1928 treatment was attempted with hope of success but had to be interrupted. In 1930 a further attempt was made with apparent success.

Analysis of Treatment since 1928.

1. Gardenal sodium was given in food, in a daily average dose of $1\frac{1}{2}$ grains, from October, 1928, to January, 1929. The unfortunate development of oedema and ascites, owing to the patient's susceptibility to this drug, abruptly terminated this treatment, the result is shown in the following table, B :—

TABLE B.

Average Monthly Incidence of Fits.	Major.	Minor.
During the nine months preceding gardenal treatment	2	49
During the period of treatment 	1	55
During the three months following treatment ...	3	65

It will be noted that while there was no apparent improvement during the period of treatment a sharp increase of minor fits followed the cessation of gardenal.

2. Sedobrol was substituted for gardenal during the next 7 months of 1929. The average dose was 2 cubes daily, equivalent to 35 to 40 grains of sodium bromide. The results were comparatively satisfactory, while the cessation of treatment at the end of July, 1929, was followed by a sharp increase in the incidence of both grades of fit.

TABLE C.

	Major	Minor
Number of fits during the administration of sedobrol	12	352
Number of fits during the rest of 1929 (four months)	15	428

In terms of a monthly average of incidence—

1. During sedobrol treatment—a period of 7 months	2	44
2. Following the cessation of sedobrol—4 months ...	4	107

It is noted that sedobrol apparently controlled the incidence of minor fits more effectively than gardenal.

Further treatment was postponed until July, 1930, when kaylene was commenced in an endeavour to control the patient's defective habits. Owing to the patient's attitude towards medicine it was decided to mix an ounce of kaylene in the omelette which he had for dinner each evening. Although he grumbled about his food being poisoned he did not refuse to eat this concoction. As no immediate result was obtained it was decided to attempt the combination of luminal and sedobrol again with the kaylene. The following procedure was adopted and is still being carried out :—

3. A.—*Sedobrol*, 1 cube is given in breakfast coffee, equivalent to 15 to 20 grains of sodium bromide.

2 cubes are given in soup at dinner, equivalent to 30 to 40 grains of bromide.

B.—*Luminal soda*, 1 grain in sherry at mid-day ; $\frac{1}{2}$ grain in coffee at dinner.

C.—*Kaylene*, $\frac{1}{2}$ to 1 ounce in omelette for dinner.

This procedure is possible only on account of the patient's stereotyped meals. Any modification of the rigid routine he insists on is refused by him.

The following table, D, contrasts the incidence of fits and the occasions on which his habits were defective during 1930 and 1931.

TABLE D.

	Major Fits.	Minor Fits.	Habits Defective on	
			Days.	Nights.
1930.				
January 1st to March 31st	2	243	56	4
April 1st to June 30th ...	6	242	52	6
July 1st to September 30th	12	298	43	1
October 1st to December 31st	2	155	28	3

Kaylene was commenced on July 10, 1930. Luminal and sedobrol on October 6, 1930.

	Major Fits.	Minor Fits.	Habits Defective on	
			Days.	Nights.
1931.				
January 1st to March 31st	2	67	20	3
April 1st to June 30th ...	3	14	12	0
July 1st to September 30th	7	5	16	0
October 1st to December 31st	2	3	1	0

Present mental state.—His chief special attendant, who has been with him for 25 years, states that the patient is far more reasonable and easier to manage now than he has ever been.

His hallucinations and delusions persist unchanged but are less pronounced and produce less restlessness and irritability, although mental deterioration has been steadily advancing—otherwise he would refuse to take his doctored meals—he is far more interested in his surroundings than he has been for 10 to 12 years.

Summary.—It would appear that the combination of sedobrol, in doses of 45 to 60 grains per diem has proved successful in reducing the incidence of minor fits to a remarkable degree. No modification of major fits is shown. It is suggested that the combination of sedobrol and luminal soda has made it possible for kaylene to assist materially in controlling habits which once were excessively defective, e.g., without constipation there is no incontinence during a major fit.

L.—*Dental Department (Main Hospital).*

Report.—By Mr. GAINSFORD REED, L.D.S., Visiting Dental Surgeon to the Main Hospital, St. Andrew's Hospital.

The number of visits made to the hospital during the year 1931 was 54. One hundred and forty-four patients (72 male and 72 female) attended for dental examination and treatment, and the total attendances made by the patients were 892. Ninety-three reports on cases were sent in.

Oral sepsis to a *marked* extent was recognized, clinically, in 54 per cent. of the patients treated.

The dental treatment has been facilitated, and the comfort of the patients increased, by the provision of a dental clinic on both the male and female sides of the Main Hospital.

The vital importance of maintaining the mouths of the patients in a healthy condition becomes more evident in view of the fact that modern research has thrown fresh light on the nature of mental disorder, and the freedom from oral sepsis (either of the closed or open type) producing bacterial toxins, has been the aim in the treatment of these patients.

The acceptance of this view of the causation of certain diseases has influenced the methods of treatment adopted, inasmuch as conservative treatment involving root treatment of the teeth has not been carried out.

Increasing use has been made of radiographs to diagnose the root condition of doubtful teeth, and in no case where root-filled and crowned teeth have come under observation has it been possible to pass them as healthy, many of them showing apical granuloma.

Periodontal disease leading to interstitial gingivitis, and advanced cases of chronic and local periodontitis, still predominate in the mouths of those patients who come up for treatment and are classified under those showing *marked oral sepsis*.

The mouth of one patient showed an advanced state of ulcerative stomatitis. The effect of oral sepsis as a contributory factor in the causation of his mental disorder was proved by the beneficial result of the treatment.

Radical treatment has been carried out either under general or local anaesthetics, and investigation made during the year shows that improvement in both the general condition and the mental state has followed the removal of these teeth.

A feature of the removal of septic teeth in these patients is that there is very little disturbance physically and in none of the cases done have complications arisen. It is particularly noticeable where the patient has been difficult to deal with during the initial period of dental treatment, that, later on, and in many cases where the co-operation in the use of dentures is required, he, or she, takes interest in the work, and, consequently, contributes to the mental well-being.

The following is a summary of the work completed throughout the year, viz. :—

Number of general anaesthetic cases for teeth extractions, 30 ; number of patients who received N₂O and local anaesthetics for teeth extractions, 40 ; extractions, 479 ; fillings, 92 ; attendance by patients for scaling, gum treatment, cauterizing, and syringing, 206 ; dressings, 17 ; new dentures inserted, 40 ; dentures repaired or remodelled, 41.

LII.—FROM HOLLOWAY SANATORIUM, VIRGINIA WATER.

Report of Clinical Investigations.—By Dr. H. DEVINE, O.B.E., F.R.C.P., Medical Superintendent.

Routine Laboratory Work.—Since the new laboratory has been installed useful work has been carried out and has included the following examinations :—

Urine examinations.—Routine tests, 260 ; bacteriological, 10 ; acetone reactions, 40 ; urea concentration, 8. Blood examination.—Counts, 9 ; sugar, 4 ; urea, 4. Sputum, 4. X-Rays, 60.

LIII.—FROM THE WONFORD HOUSE HOSPITAL, EXETER.

Laboratory Report.—By Dr. H. W. EDDISON, D.P.M., Medical Superintendent.

The following investigations were carried out during the year :—

Urine.—Routine examinations, 582 ; sugar estimations, 255 ; albumen estimations, 6 ; urea concentration tests, 21 ; spectroscopic examinations, 15. Blood.—Sachs Georgi serum reaction, 9 ; blood urea estimations, 13 ; blood sugar estimations, 10 ; sugar tolerance tests, 2 ; Van den Bergh test, 2 ; serum agglutination reactions, 46.

Special Prognostic Investigations.

A detailed examination has been made in the case of elderly patients with a view to helping the physical prognosis. Besides the routine general

examination of the heart, blood-vessels, blood and urine, the kidney function is investigated by means of urea concentration tests, and blood urea estimations with a known protein intake.

Twenty-five cases have, so far, been examined and include cases of senile dementia, Alzheimer's disease, secondary dementia, confusional insanity, chronic mania and chronic melancholia.

Owing to the small number of cases examined, it is not desirable to express any conclusion at this stage.

LIV.—FROM THE ROYAL EASTERN COUNTIES INSTITUTION FOR THE MENTALLY DEFECTIVE, COLCHESTER.

General Report.—By Dr. F. DOUGLAS TURNER, Medical Superintendent.

A.—*Research.*

A Research Department was started in January, 1931. Dr. L. S. Penrose was appointed Research Medical Officer, and Miss Newlyn the Social Investigator attached to the department. The department is financed as follows:—£500 a year from the Medical Research Council, £275 from the Darwin Trust, and the rest of the expenditure has to be found from the Institution funds. The cost of running the department for the year 1931 was £1,200 6s. 5d. Offices were provided by the Institution. Later in the year a pathological laboratory was built and equipped, the cost being charged to the Peckover Schools Fund.

* * * *

Research into the Causes of Mental Deficiency.—This Institution contains defectives of all grades and types, and the chief work of the Research Department is the examination of every case as completely as possible from the physical, mental and genetic points of view. The examinations include tabulation of physical signs, Wassermann tests, head measurements, blood grouping and mental testing by the most recent-standardized methods which are available. In the mental testing all the medical officers co-operate. The objects of this investigation are: (i) to find out what are the frequent or important causes of mental deficiency and, (ii) the determination of a satisfactory method of classification of defectives which takes into account the various causes which are found responsible for the condition.

The building of the laboratory was only finished towards the end of 1931, so that there is little to report except that routine pathological examinations are now in full swing.

Since there are over 1,400 patients in the Institution, a complete examination of every case, on the lines indicated, will necessarily take a considerable time. Up to the present 500 cases have been examined but, before any report is made on the classification of these cases, it is expected that all the patients will be brought under the scrutiny of the Research Department.

B.—*Investigation into the Family Histories of Mental Defectives.*—By Dr. L. S. PENROSE and Miss D. E. NEWLYN.

So far 230 family histories have been taken. Investigations of this kind have been done so many times before that the only justification for continuing this type of work is that it should be done with more care and accuracy than in previous investigations. In the present work certain criteria are kept in mind in order that the information obtained in examining the pedigrees will be as useful as possible. Families are visited, in frequent instances, a number of times and no pains are spared

in getting medical and sociological details as accurate as possible. Hospital reports are scrutinized, practitioners written to and district authorities applied to for information; friends of the families of the patients and other persons who know them well, such as schoolmasters and clergymen, are frequently visited. Emphasis is laid on finding out as much as possible about the brothers and sisters of the patients. With modern methods of analysis the most important genetic facts can be discovered without dealing with more than two generations. Moreover, the standards of medical diagnosis and of education have undergone considerable alterations even during this period and, when grandparents are considered, the errors due to alteration of these standards are much greater than when only the parents are considered.

There are certain criteria of good quality evidence which are taken into account in assessing the genetic factors which may be responsible for mental deficiency. For example, the facts ascertained must be simple and easily recognizable circumstances; the facts elicited from different sources must be mutually consistent and also, of course, consistent with themselves. Any fact on which the diagnosis of a case depends must be checked by as many sources of information as possible.

It is difficult to live up to all these criteria in the investigation of every family history. This can easily be shown by the following considerations.

Out of the 230 cases whose family histories have, so far, been studied, 20 are of uncertain parentage in that they are definitely illegitimate. This figure of 9 per cent. for illegitimacy is considerably greater than that for the general population of England and Wales, e.g., 4.6 per cent. in 1930. This is one of the consequences of dealing with patients in institutions because it is obvious that illegitimate children will be more likely to require institutional care than legitimate ones.

As regards the availability of one or both parents for obtaining a family history, it was found that, among the 230 families of patients, in 137 instances both parents were living, and in England; 66 patients had only one parent who could be interviewed; and 27 had no parents from whom histories could be obtained, either because they were dead or because they were permanently abroad, at sea or of unknown whereabouts.

It does not *necessarily* follow that a better history is obtained when both parents are alive and can be interviewed. The value of the history depends on the mentality of the person who gives it, as well as on their intimacy with the facts. There is, however, one very serious way in which histories are affected when the parents themselves cannot be found. This is in the discovery of miscarriages and children who died in infancy. In rare cases records are found, in which doctors have taken histories from the deceased parents during their lifetime, which contain the information required and, occasionally, a brother, sister or other relative, has taken sufficient interest in the family to be able to give a good account of these occurrences. At the same time, unless the parents, and particularly unless the mother, can be interviewed, the chances of getting an accurate account of the fraternity of the patient are small. This is demonstrated by the following figures which show the average number of children and the average number of miscarriages which are found by different methods of investigation.

Source of History.	Number of Families.	Average Number of Children.	Average Number of Miscarriages.	Percentage of Miscarriages.
(a) Mother	173	5.2	0.5	9.4
(b) Father or other relatives	51	6.4	0.3	4.6
(c) Non-relatives	6	2.1	0.0	0.0

It will be seen that when the history is obtained from the father or other relatives the families are larger than when the history is obtained from the mother. This is probably due to more finished families being included in the latter group than in the former. On the other hand, the best test of accuracy, namely the proportion of miscarriages discovered, has only about half the value in the latter group that it has when the mother gives the history. When no relatives are available the small number of members found in the fraternities indicates that these histories are not reliable. Thus it seems clear from these considerations that, before the results of any family investigations can be evaluated, serious consideration must be given to the details of how such data have been collected. In the present research this is being done.

C.—*Mongolian Imbecility*.—By Dr. L. S. PENROSE.

The majority of mental defectives form such a heterogeneous crowd that it is difficult to say how any satisfactory solution to the problem of causation can be obtained except by splitting them up into small groups of similar cases. Furthermore, in only a few classes is a diagnosis obtained with certainty. Considerations of this kind have led to the conclusion that little advance is likely to be made unless a better understanding can be obtained of the group of defectives whose diagnosis is outstandingly simple, namely, those of the mongolian type.

The investigation of these cases has, therefore, taken a certain precedence over the others and the family histories of about 100 such cases living in the Eastern Counties, which include all those in the Institution, have been recorded. Blood grouping has been carried out on all the mongolian imbeciles in the Institution and on many others in other institutions by kind permission of the medical superintendents concerned. The results of the blood grouping have already been published. Furthermore, the inferences obtained from the investigation of the first 82 family histories will appear shortly in an article in the *Journal of Genetics*. The view taken as to the aetiology of these cases is the only one which, in the present state of our knowledge, seems logical. Since there are strong indications that the condition has, ultimately, an hereditary basis and also equally strong evidence that a prenatal environment is of great importance, the only possible inference is that both these factors must be involved in the causation of the disease. This assumption has some probability of truth in almost all other types of mental defectives and, therefore, it is highly important that, in such a clear-cut condition as mongolism, the hypothesis should be demonstrated to be correct if possible. This would help a great deal in understanding other types of mental deficiency.

D.—*Schick Test and Diphtheria Immunization*.—By Dr. R. MUNRO.

The work in connection with the problem of dealing with diphtheria in a large institution of this kind containing many children which was reported on in 1929 is being continued. During 1931 the Schick Test was carried out on 137 recent admissions, of whom 67 gave positive reactions. The total number of patients who have been tested since the investigation was started in 1925 is 1,660, of whom 562 have given positive reactions, i.e., 34 per cent. Prophylactic immunization has been undertaken in all of the cases giving positive reactions. Since 1925 no case of diphtheria has occurred in the Central Institution or in the seven branches in which the investigation and immunization were commenced. There have been a few isolated cases in the Littleton House School branch amongst newly admitted boys before immunization was completed.

E — *Whooping-cough*.—By Dr. F. C. OSGOOD.

During the year there was an outbreak of whooping-cough in three classes of lower grade children. These children meet in the school classes. In order to prevent an epidemic, prophylactic vaccination was resorted to. Three doses of Parke Davis's whooping-cough vaccine B were given and none of the children immunized contracted the disease. One boy who was ill at the time with another complaint was not immunized and had a severe attack.

F.—*Cerebral Diplegia*.—By Dr. F. C. OSGOOD.

An investigation into the aetiology and the possibilities of treatment of cases suffering from cerebral diplegia is being undertaken. The present classification of these patients is far from satisfactory. It is suggested that there are two main types:—

- (i) a congenital condition of prenatal or hereditary origin.
- (ii) a condition due to multiple sub-cortical venous haemorrhages occurring in consequence of congestion or injury at birth.

Several patients suffering from severe spastic paraplegia have been treated with stramonium with good results.

G.—*Publications*.

1. *The Creases on the Minimal Digit in Mongolism*.—By Dr. L. S. PENROSE, *The Lancet*, September 12th, 1931.

A simple and definite abnormality, not hitherto described, is the presence of one crease only, instead of two, on the minimal digit. This peculiarity is found in about 20 per cent. of all cases of mongolism. The transverse palmar line is about twice as frequent.

2. *The Blood Grouping of Mongolian Imbeciles*.—By Dr. L. S. PENROSE, *The Lancet*, 1932. Vol. I, p. 394.

The blood grouping of 166 mongolian imbeciles was studied and compared with a control group of 226 non-mongolian defectives. No significant difference in the distribution of the agglutinogens A and B in the two classes of cases was discovered. The findings were compared with the distributions of the four blood groups discovered in different races of mankind. The mongolian imbeciles show no resemblance to any Mongolian race as regards this test, but correspond closely to the control group of non-mongolian defectives.

3. *An Investigation into the Position in Family of Mental Defectives*.—By Dr. F. DOUGLAS TURNER and Dr. L. S. PENROSE, *Journal of Mental Science*, July, 1931.

The material on which this investigation is based was compiled by the members of the Mental Deficiency Sub-Committee of the Research and Clinical Committee of the Royal Medico-Psychological Association. The following conclusions were suggested:—

- (1) In low grades of amentia (idiots), the first-born child is somewhat more frequently affected than the other members of the fraternity.
- (2) In high grades of amentia the defectives are more frequently found among the later members of the fraternity.
- (3) Certain special groups of cases have their own peculiar distribution in the family. Mongols tend to come last, and cases with a history of difficult labour tend to come early.
- (4) The data give no support to Goddard's hypothesis that mental deficiency is due to a single recessive gene substitution.

LV.—FROM CALDERSTONES MENTAL DEFICIENCY INSTITUTION, WHALLEY.

Report of Research.—Communicated by Dr. F. A. GILL, Medical Superintendent.

Routine Laboratory Work.—The following is a summary of the 2,968 examinations, etc., conducted in the laboratory during the year:—

Bacteriological.—Faeces and rectal swabs for dysentery and concomitants, 536; faeces for other pathogenic organisms, T.B., etc., 149; sputa for T.B., 51; urines, 5; throat swabs, 4; vaccine preparation, 2; miscellaneous, 22.

Serological.—Sigma reactions, 629; agglutination reactions, 772.

Bio-chemical.—Urines: routine, 262, sugar estimation and test for Ketones, 312, miscellaneous estimations, 37; milk, 12; blood estimations: sugar, 12, miscellaneous, 2.

Microscopical.—Urines, 95; R.B.C. counts, 10; W.B.C. counts, 11; haemoglobin and colour index, 10; differential leucocyte count, 12; For abnormal blood cells, 12; for ringworm, 3; miscellaneous, 4.

Post-mortems, 4.

Dysentery, Female Side.—By Dr. D. J. ROSE.

A total of 27 fresh cases of dysentery were notified during 1931. Sex distribution: 23 males, 4 females.

Ward Distribution.							Male.	Female.
S.2	...	...	...	...	...	...	19	—
R.1	...	...	...	...	...	...	—	1
O.2	...	...	...	...	...	...	—	1
W.	...	...	...	...	...	...	—	1
S.1	...	...	...	...	...	...	2	—
K.1	...	...	...	...	...	...	2	—
X.1	...	...	...	...	...	...	—	1

In S.2 the disease assumed epidemic proportions, the first case occurring on March 17th and the last on June 17th.

The case on R.1 was a low grade feeble-minded woman employed as a cleaner on S.2. No further cases occurred on R.1.

The case on O.2 was suspected in March, 1930, but was at that time negative to bacteriological and serological tests. No further cases have occurred on O.2.

The case on W. was due to infection with B. Morgan No. 1, and did not produce agglutinins for B. dysenteriae Flexner Z, as did all but two of the remaining fresh cases.

The cases on K.1, X.1 and S.1 were patients who had already been segregated in dysentery wards on serological evidence. As they had not previously had a known attack of dysentery they had not previously been notified.

Grounds on which Diagnosis was Based.—Bacteriological evidence: B. dysenteriae Flexner, 12, B. Morgan No. 1, 2. Serological evidence, 11; clinical evidence only, 2. Specimens of faeces examined, 263; agglutination reactions done, 626.

The Epidemic in Ward S.2.

A total of 19 cases occurred in this ward, the tendency being for the more recently admitted patients to be affected. From 10 cases B. dysenteriae Flexner (Type Z, Oxford Standards) was grown, 7 further cases were found to produce high titre agglutination reactions against the same organism, and in 2 cases the diagnosis was made upon clinical evidence only. There was one death—a low grade Mongolian imbecile.

The procedure adopted was as follows:—

(1) The ward is placed in quarantine.

(2) All patients are made to use chambers, instead of lavatories, and any stools which are abnormal are reported immediately to the Medical Officer and a bacteriological examination made.

(3) The blood of all the patients in the ward is examined by the modified Dreyer's method of the Medical Research Council against the standard Oxford emulsions of *B. dysenteriae* Flexner V, W, X, Y and Z.

(4) All patients who come under suspicion are at once isolated and placed under observation until the diagnosis is finally determined. Only those patients who are consistently negative by bacteriological, serological and clinical standards are returned to the ward.

The infection was found to be due to an organism of Z strain, and in order to expedite the investigation, some sera were only examined against emulsions of V, W. and Z type organisms.

As a result a further 17 patients were permanently segregated in dysentery wards.

Experience shows that the infecting organism is easily recoverable from the stools passed at the very onset of the disease, provided that the stool is plated out within half an hour of being passed. After the first day of the disease the organism is much harder to find, and the same is true if there is delay in plating out.

The actual source of the infection was not discovered with any certainty, but was thought to be a carrier.

The effect of this epidemic was to overcrowd the three wards set apart as permanent dysentery segregation wards, and as the number of vacancies in the remaining wards was only small, it was not found possible to provide a fourth dysentery ward. It therefore became necessary to send some of the recovered cases back to the ordinary wards, and it was therefore decided to attempt to set a standard of "cure" for some of these cases. The higher grade boys were chosen and the following standard of non-infectivity was used:—

(1) General health good.

(2) Stools consistently normal macroscopically.

(3) Six cultures of faeces negative for *B. dysenteriae*, *B. Morgan* No. 1, and *B. faecalis alkaligenes*.

(4) Agglutination reactions, known to have been raised, fallen to, and maintained within, normal limits.

As a result, five feeble-minded boys were returned to S.2 Ward.

As a comment upon (4) above, it has been observed that acute cases of bacillary dysentery do occasionally fail to form agglutinins, even though the organism has been recovered from the stools, and the disease is running a favourable course. In such cases a continued low reading would have no significance, but in cases where a high titre reading has been obtained, it would appear probable that a fall in the amount of agglutinin present would correspond generally with the degree of infection.

The success, or otherwise, of this experiment, which was dictated not by desire, but by necessity, can only be determined by further experience.

Chronic and Relapsing Cases.

There continue to be a number of chronic cases under treatment. A few of these, all very low grade cases mentally, are free from some abnormality of the stools for only very short periods. Others make an apparently good recovery which is maintained for a period of some months, at the end of which a relapse, with mild symptoms, occurs.

At the time of the epidemic in S.2 ward, two relapses occurred in S.1 ward, and as these two wards together form one block, the possibility arose that the infection in S.2 might have come from S.1. The organism in these two cases, however, proved to be *B. dysenteriae* Sonne. This is the first occasion on which this organism has been isolated from cases in

this institution. Whether this organism was the original infection in these cases cannot be said, as the original attack occurred before the institution was equipped with a pathological laboratory.

The experience of the year confirms the belief that in this institution at least, infection spreads from patient to patient direct, and that the spread of the infection is difficult to control where large numbers of low grade defective children are accommodated together: and further that the detection of carriers is a matter of considerable uncertainty.

Sigma Reactions.—By Dr. D. J. ROSE.

There were 75 patients admitted to the female side during 1931, and the blood sera of 74 of these were submitted to the Sigma Reaction. The results are tabulated below:—

				Positive.	Negative.	Total.
Females over 16	...	...	...	1	38	39
Females under 16	...	...	...	2	15	17
Males under 16	...	...	...	1	17	18
				—	—	—
Totals...	...	...	...	4	70	74
				—	—	—

One patient died before her blood was examined.

				Type of Infection.		Total.
				Congenital.	Acquired.	
Females over 16	...	...	...	—	1	1
Females under 16	...	...	...	1	1	2
Males under 16	...	...	...	1	—	1
				—	—	—
Total	...	...	...	2	2	4
				—	—	—

One adult female patient, whose blood gave a negative reaction, had undoubtedly had a recent infection with syphilis, but treatment by injection had been begun previous to admission.

In addition 255 other patients were submitted to the same test.

				Positive.	Negative.	Total.
Females over 16	...	...	...	1	189	190
Females under 16	...	...	...	—	13	13
Males under 16	...	...	...	—	52	52
				—	—	—
Total	...	...	...	1	254	255
				—	—	—

These figures, when added to those already reported, give the following totals:—

				Positive.	Negative.	Total.	Percentage.
Males over 16	...	...		10	277	287	3.48
Males under 16	...	...		7	269	276	2.54
				—	—	—	—
Total Males	...			17	546	563	3.02
				—	—	—	—
Females over 16	...	...		25	616	641	3.90
Females under 16	...	...		6	205	211	2.85
				—	—	—	—
Total Females	...			31	821	852	3.64
				—	—	—	—
Total both sexes	...			48	1,367	1,415	3.39
				—	—	—	—

LVI.—FROM THE STOKE PARK COLONY, STAPLETON, BRISTOL.

General Report.—By Dr. R. J. A. BERRY, F.R.C.S., Director of Medical Services.

During the year 1931 the general scheme of an extended research and consultative medical service inaugurated by the late Reverend H. N. Burden, Founder and first Warden of the Institution, and approved by the Board of Control, has been in full operation and has been still further extended by the present Warden, Mrs. H. N. Burden.

A complete mental and physical examination has been made of over 500 patients, including Binet, Porteus, and Merrill-Palmer tests, the last of which has been found useful in the lower grades of the idiot-imbecile class, and as all these tests have been standardized for normal children they afford an excellent standard of comparison for defectives. A group of 162 female adult feeble-minded patients have been thoroughly tested and examined by all the various Medical Consultants on the staff. The results of this examination are now under analysis and investigation, and will be published as soon as possible. The general trend of the investigation seems to indicate that mental deficiency is not a disease or complex of diseases, but is an under-development, not only of the brain, but of the nervous system generally, as well as of the somatic and physical systems.

Some of the psychological results from this group were read before the British Association for the Advancement of Science by Dr. R. G. Gordon and Dr. R. M. Norman at the annual meeting in London, 1931. In July, 1931, Messrs. Kegan, Paul, Trench, Trubner & Co., published "The Mental Defective," by the Director of Medical Services and Dr. R. G. Gordon, and a request from an American publishing company to re-publish in the United States was granted by the English authors and publishers.

In September, 1931, Mr. R. M. Bates, F.R.C.S. (Eng.) assumed duty as Resident Medical Officer, and under his direction the hospital and medical service of the Institution has been enlarged, re-organized and modernized. Dr. R. M. Norman (M.B. Bristol) was also appointed Senior Assistant Medical Officer to the Institution, and Dr. Evelyn Bates (M.R.C.S. Eng., L.R.C.P., Lond.) was appointed non-resident Clinical Pathologist.

The Council of the British Medical Association having appointed a special committee of enquiry into mental deficiency and into the problems presented, that Committee nominated Professor Berry as its Chairman, with Dr. R. G. Gordon as Honorary Secretary, and expects to present its report at the forthcoming centenary meeting of the Association in London in 1932.

LVII.—FROM THE LEAVESDEN (LONDON CO.) MENTAL HOSPITAL.

Report on Research Work.—By Dr. R. M. STEWART, F.R.C.P., D.P.M., Medical Superintendent.

A.—Laboratory Investigations.

A summary of the examinations conducted during the year is appended.

Bio-chemistry.—Urine analysis, 1,709; blood sugars, urea, etc., 2; occult blood, 4; c.s.f., 78.

Bacteriology.—Cultures, (faeces, urines, bloods, etc.), 1,019; swabs (various), 39; agglutinations, Widal's, etc., 71; demonstration of organisms, etc., 392; demonstration of worms, ova, etc., 25; other specimens, 30.

Haematology.—Blood counts, differentials, etc., 68.

Histology.—Sections prepared, examined and mounted, 1,302.

Museum.—Brain models in wax, specimens mounted, preserved, etc., 52.

Photography.—Micro-photography, 144; routine photography, 473; lantern slides, etc., 49.

Specimens sent to Central Laboratory, 468.

B.—*A Case of Infantile Hemiplegia Associated with Facial Naevus and Mental Defect.*—By Dr. R. M. STEWART, F.R.C.P., D.P.M.

The following example of the now familiar syndrome which is characterized clinically by infantile cerebral hemiplegia in association with a contralateral capillary naevus of the skin appears to differ from all previously reported cases in that, notwithstanding the marked degree of cutaneous involvement, the pathological changes found after death were hardly visible to the naked eye.

The patient was mentally defective, and from an early age had been subject to epileptic fits of the Jacksonian type. An extensive capillary naevus was present on the greater part of the left side of the face and on certain parts of the trunk and limbs. On the right side there was an incomplete hemiplegia. Apart from a moderate degree of thickening and congestion of the pia-arachnoid, inspection of the convex surface of the brain revealed nothing of importance and it was only by careful palpation that evidence of an underlying pathological condition was revealed. In an area limited to the upper end of the precentral gyrus and the grey matter of the adjacent superior frontal gyrus, a deposit of gritty material was discovered which on microscopic examination proved to be composed of minute particles of calcium salts. In the pia-arachnoid covering this area there were present several small vessels with faulty development of their walls. These constituted the sole evidence of angioma.

The left cerebral hemisphere was considerably smaller than the right. This abnormality, which was present in Kalischer's case and in the first case reported by Cushing, occurs on the same side as the facial and leptomeningeal angioma—an association which suggests that the latter may in some way be responsible for both the cerebral hypoplasia and the contralateral hemiplegia.

In the case reported above, however, where no angioma visible to the naked eye could be found, such an explanation is clearly inadmissible. Moreover, in the writer's experience inequality of the two cerebral hemispheres is not an uncommon finding in the brains of persons who exhibit mental defect without cutaneous naevus; the condition seems to be the result of a simple developmental arrest, and when associated with congenital infantile hemiplegia, as is often the case, examination of the cortex reveals little else than paucity of the cortical neurones. It seems likely, therefore, that the meningeal angioma is an associated developmental anomaly which has nothing to do with either the mental defect or the infantile hemiplegia.

(*Journal of Neurology and Psychopathology*, 1931, xii, 47.)

C.—*Angioma Arteriale Racemosum in an Acallosal Brain.*—By Dr. R. M. STEWART, F.R.C.P., D.P.M., and Dr. W. R. ASHBY, D.P.M.

A case is described, clinically and pathologically, of arterial and venous angioma of the brain. Other main features of interest were that the corpus callosum was entirely absent, that the patient was demented and that she suffered from epileptic fits. She appeared to be normal until about the age of 19, when she had a severe blow on the head. Paralysis, fits and dementia set in and by the age of 32 she was completely bedridden and in a state of profound dementia. She died in status epilepticus.

Post-mortem, a large angioma composed of arteries and veins in an inextricable tangle was found over the left frontal pole. Many of the ordinary vessels of the brain were abnormal, showing long dilatations, aneurysms and anatomical irregularities. Microscopic examination of the angioma showed that the vessels were very unlike arteries and veins. The angiomatous condition was found to be more widely distributed than was at first realized, and examination of the cortex showed the condition to be present in almost all parts except the occipital cortex. The basal ganglia were not affected.

Degenerative changes were conspicuous. The angioma was gritty with a sand-like deposit, which stained like calcium. A chemical analysis of the angioma was made, with control estimations from the other side of the brain and from normal brain in order to decide definitely the nature of the deposits. Calcium was found in the angioma in about 12 times the normal amount.

The case is discussed in its relation to other cases and to other workers' views.

(*Journal of Neurology and Psychopathology*, 1931, xi, 289.)

D.—*A Case of Adiposo-Genital Dystrophy Occurring in a Mongol.*—By Dr. R. M. STEWART, F.R.C.P., D.P.M.

A case of adiposo-genital dystrophy occurring in a Mongolian imbecile is described. Although Mongolism is often popularly ascribed to some disorder of the endocrine system, yet cases showing a clear syndrome are rare.

The patient was an adult female, exhibiting clear characteristics of Mongolism, but extremely obese. The fat was distributed mostly over the pectoral, girdle and femoral regions. Hair was absent in the axillae and scanty over the pubes. Menstruation, which was always scanty and irregular, ceased at 41 years. Vision appeared to be impaired. Partial optic atrophy was present on both sides. A sugar tolerance test showed a "lag" type of curve. X-Ray examination showed no enlargement of the pituitary fossa. She existed perpetually in a state of indifference and somnolence. The case is discussed in relation to theories of the origin of Mongolism.

(*Journal of Neurology and Psychopathology*, 1931, xi, 324.)

E.—*The "Path" Theory of Cortical Function.*—By Dr. W. R. ASHBY, D.P.M.

It is suggested that the "path" theory of neural function is misleading and does not correspond to the actual events in the nervous system.

By a survey of the history of nervous physiology, it is shown how the early facts fitted the path theory well, but later work has proved incompatible with this theory. On the other hand the theory tends to remain the only one in the field because it is difficult to formulate any alternative.

Various facts are described and analysed showing how they are incompatible with the path theory.

An alternative theory is put forward to show that the C.N.S. need not, *a priori*, work on "path" lines. The analogy of a pattern of ripples on water is described, and it is suggested that the reactions of the C.N.S. may be governed, not by paths, but by the patterns formed by the incoming impulses on the grey matter.

(*Journal of Neurology and Psychopathology*, 1931, xlvii, 148.)

LVIII.—FROM THE CATERHAM (LONDON CO.) MENTAL HOSPITAL.

General Report.—By Dr. T. LINDSAY, F.R.C.S. (Edin.), D.P.M., Medical Superintendent.

In March of this year Chaldon Mead Hostel, to accommodate 35 high-grade male defectives was opened. The boys are being trained chiefly as gardeners, but six are being trained as house boys. Careful selection is made from the inmates of the various institutions for defectives belonging to the Council, including, of course, Caterham itself.

The various departments of the hospital have continued to do useful work. On the pathological side, Dr. Paddle, with the assistance of

Dr. Magrath, has continued his investigation of dysentery. Scarlet fever, which in the previous year interfered greatly with the working of the Occupation Centre and the general entertainment of the patients, has been dealt with by Dick Testing and inoculation with satisfactory results.

Mental testing has been undertaken on a comprehensive scale by Dr. Earl, assisted by Dr. Milmo. Both verbal and performance tests have been done, while the Merrill Palmer scale has been used for young children in the Occupation Centre and low grade adult imbeciles.

Summary of tests performed in the laboratory during the year.

Urine.—Routine examinations, 2,359; bacteriological, 9. Faeces.—For typhoid and B. dysentery groups of organisms, 352; for T.B. organisms, 42; blood occult, 3. Throat swabs for B. diphtheriae, etc., 32. Blood counts.—White and red cells, H.C., etc., 25. Wassermann reactions.—Blood serum, 363; c.s.f., 135. Sachs Georgi flocculation tests, 5. Sputum for B. Tuberculosis, etc., 39. Blood cultures, 2. Dreyers' tests.—Flocculation tests, B. typhoid and B. dys. groups, organisms, 145. Histological sections 32.

Scarlet Fever.

There were 12 cases of scarlet fever on the female side, 5 nursing staff and 7 in-patients being affected. In March there were 3 cases, 2 being nurses, in April 3, 2 being patients, in May 2, June 1, August 1, October 1, and December 1. The wards affected with number of cases were:—

A.2, 1 (nurse); C.2, 2; D.1, 1; D.3, 1; E.2, 1 (nurse); F.1, 1; F.2, 2 (1 nurse); G, 1 (nurse); H, 2 (1 nurse).

Most of the cases were of the mild type, but one patient died after transfer to a fever hospital.

In view of the widespread nature of the infection, cases occurring in widely separated wards such as F, E.2, and H at about the same time, it was found impossible to trace the source of infection.

Since December last we have therefore adopted the principle of "Dick" testing all patients in those wards which have had scarlet fever, and inoculating all susceptibles with 2.5 c.c. concentrated streptococcus anti-toxin (scarlatina) immediately after the development of a case of scarlet fever in such ward. This procedure appears so far to have yielded quite good results, no further cases having developed scarlet fever after the systematic inoculation.

It is interesting to note that an uninoculated nurse was the only one to develop the disease in a ward where there had been one case of scarlet fever, and all the patients had been inoculated.

Dysentery.

There were 42 cases of dysentery amongst patients, 25 on the male side and 17 on the female side. The prevailing organism was the Flexner Z.

Following the kind advice of Professor J. Shaw Bolton, of Wakefield, we are now inoculating all contacts with an autogenous vaccine prepared at the Maudsley Hospital Central Laboratories from the prevailing strain of organism. There have been no further cases since September last.

The agglutinating titre of the blood serum in the case of three patients was ascertained weekly for 22 weeks after inoculation. They received 250 million organisms each on the first week, and 500 million at the end of seven days.

In patient (a) his titre (in standard agglutinin units, reduced titre) rose to 192 after the second week, falling gradually to 70 at the 18th week, at the end of the 22nd week it was still 55.

Patients (b) and (c) rose to 40 at the end of the 1st week, fell to 20 at the end of the second week, and then gradually fell to 12 at the end of the 22nd week.

If the agglutinating titre curve is any indication of the patients' immunity to the disease, then these three patients could still be considered fairly immune at the end of 22 weeks.

The Incidence of Cerebro-spinal Syphilis in Defectives.

The Wassermann reaction of a further 210 cases was investigated, making a total of 394 cases examined up to date. The number of positives was 31, or 7·8 per cent.

The totals are yet too few to draw any conclusion, and further cases are being added.

A thorough pathological investigation was carried out in a case of "Coarse cirrhosis of liver in a congenital syphilitic" (*British Medical Journal*, February 6th, 1932). The liver and spleen were cirrhotic. There were microscopical infarcts of the heart and spleen. No spirochaetes were found in either liver or spleen. The case showed a strong resemblance to Banti's Disease.

Psychological Department.

Mental Tests applied during the year 1931.

(1) Stanford Revision of Binet Simon Scale	...	...	...	311
(2) Performance Tests :—				
Drawing Tests	...	...	...	57
Gaw's Series (modified)	...	...	...	53
Merrill Palmer Scale	...	...	...	37
Koh's Block Design	...	...	...	38
			—	185

Investigations (unfinished) are being carried out on the following subjects under the direction of Dr. C. J. C. Earl.

- (1) The applicability of the Merrill Palmer scale to adult imbeciles.
- (2) The drawing ability of adult defectives.
- (3) The psychology of epilepsy (in conjunction with Dr. Macdonald Critchley, National Hospital, Queen Square).

LIX.—FROM THE FOUNTAIN (LONDON CO.) MENTAL HOSPITAL.

General Report.—By Dr. JAMES NICOLL, Medical Superintendent.

The following is a résumé of the work which has been done during the year.

The addition, for a trial period, of one medical officer to the establishment has made it possible to begin an attack on the accumulated pathological material in the laboratory. There are good grounds to think it worth while to examine the condition of the several ductless glands in relation to mental deficiency. The work, as projected, will take several years to complete. As a beginning, Dr. James Newman made a histological examination of a series of 90 thyroid glands from post-mortem specimens.

The work has not yet been prepared to the extent of publication but, in a preliminary report, Dr. Newman states that he found almost every possible variety of histological appearance. After allowing for the general lack of certainty that exists in this subject, and for the possible effects of other variable factors, he finds no evidence to show any correlation between the condition of the thyroid and the existence or degree or type of amentia.

The examination of the other glands was begun by the same worker and has been continued by Dr. C. Guy Millman, his successor.

Dr. Newman made an investigation into the occurrence of acute rheumatic conditions in the population of this hospital and found the incidence to be considerably below the average. He studied this result in relation

to the several suspected aetiological factors of the disease and attempted to explain the fact that children here should, in this respect, be more healthy than those in the world outside. This work will be published fully in the near future.

Progress has been made with the collection of a representative series of models of the physical anomalies seen in mental defectives, for use in the museum and, in this connection, the research conducted in 1930 on the relation between such anomalies and the degrees and types of amentia has been continued. Dr. Noel Burke has now begun the examination of 500 normal school children in order to obtain the necessary control figures for his previous findings.

Progress has also been made by Dr. Burke in the making of cinematograph films and a fairly complete film record is now available to illustrate the various types of ament, and their treatment and training.

The following table shows a summary of the year's laboratory work.

Examinations of : Urines, 197 ; throat swabs, 86 ; sputa, 54 ; faeces, 10 ; pus, 14 ; blood counts, 10. Pathological slides mounted and stained, 460. Museum models, 12. Cinematograph films completed (about 1,200 ft.), 3. Numerous photographs (pathological and routine), photographic prints, microphotographs and lantern slides were made ; and numerous museum and other specimens are in course of preparation.

LX.—FROM THE PRUDHOE HALL COLONY, MENTAL DEFICIENCY INSTITUTION.

An Investigation into the Question of Nystagmus.—By Dr. GEORGE MCCOULL, Medical Officer.

An investigation into the question of nystagmus was carried out in the following groups of cases :—

- (1) 15 cases of nystagmus in persons certified as being mentally defective.
- (2) 5 congenital nystagmus cases in persons not mentally affected.
- (3) 50 working men not miners and without nystagmus.
- (4) 50 coal-miners without nystagmus.
- (5) 25 coal-miners with nystagmus.

This enquiry followed the lines indicated by Dr. R. J. A. Berry in the chapter on "Clinical Diagnosis of Amentia," and the conclusions, although not indicating anything new regarding mental deficiency, would seem to show that miners' nystagmus is definitely found in that zone of miners who are on the border-line of mental deficiency.

APPENDIX A.

MEMORANDUM FOR VOLUNTARY HOSPITALS.

Mental Treatment Act, 1930.

I.

OPPORTUNITIES AFFORDED BY THE ACT.

The provisions in the Mental Treatment Act which specially affect voluntary hospitals are as follows :—

(i) *Voluntary Patients.*

(a) Under section 1 (1) any person, on making written application to the person in charge, may be received and treated as a voluntary patient at any hospital approved by the Board of Control.

(b) Under section 6 (2) a Local Authority is empowered, subject to the approval of the Board of Control, to make contracts for the reception and treatment of rate-aided voluntary patients in any hospital approved by the Board of Control.

(ii) *Temporary Patients.*

(a) Under section 5 (1) a person “who is suffering from mental illness and is likely to benefit by temporary treatment, but is for the time being incapable of expressing himself as willing or unwilling to receive such treatment” may be received as a temporary patient in any hospital approved by the Board of Control. Such reception would follow upon an application made by a relative or friend, and supported by a medical recommendation signed by two medical practitioners as provided in the section. These patients are not certified as persons of unsound mind; but they may be detained under treatment for a period not exceeding six months, which can be extended by the Board of Control for further periods not exceeding six months in all.

(b) Under section 6 (1), a Local Authority is empowered, subject to the approval of the Board of Control, to contract for the reception of rate-aided temporary patients in any hospital approved by the Board.

(iii) *Out-patient Clinics.*

(a) By section 6 (3) (a), a Local Authority is empowered to make arrangements for the treatment as out-patients of persons suffering from mental illness. This provision enables a Local Authority to make arrangements with a Voluntary Hospital for the establishment of an out-patient clinic at the hospital.

(b) The Mental Treatment Act thus enables Voluntary Hospitals to participate in the treatment of mental illness in three ways :—

- (1) By the provision of a clinic for out-patients ;
- (2) By the reception of voluntary patients ;
- (3) By the reception of temporary patients.

It is, of course, appreciated that, for many years past, mental cases have, from time to time, received out-patient or in-patient treatment at Voluntary Hospitals. The passing of the new Act does not mean that patients who have hitherto been treated in Voluntary Hospitals for mental symptoms *inter alia* can only be treated in future under the provisions of the Mental Treatment Act. Many such cases will, no doubt, continue to be treated as ordinary patients received outside any statutory provision. But the Act gives to Voluntary Hospitals opportunities for undertaking the treatment of mental patients on a larger scale. It does this in two directions : it empowers Local Authorities to contract with Voluntary Hospitals for the treatment of rate-aided cases, and it affords to Voluntary Hospitals a measure of protection if they receive mental cases under the provisions of the Act.

(c) The closer co-operation of the Voluntary Hospitals in the treatment of mental illness has at least three important advantages :—

- (i) The treatment of such cases in Voluntary Hospitals is an important step towards removing the stigma which has hitherto militated seriously against the prompt treatment of mental illness in its earliest and more curable stages. There are many persons who, at this period of their illness, shrink from such a declaration of its nature as is involved by attendance at a hospital for mental disorders, while they are quite willing to attend as out-patients at a Voluntary Hospital or, if necessary, to undergo treatment therein as in-patients. Thus, the participation of the Voluntary Hospitals in this work will definitely assist the preventive treatment of mental illness to the great benefit of the community at large.
- (ii) To the hospitals themselves the introduction of mental cases would mean the completion of the ambit of their activities. Their work of healing cannot be regarded as comprehensive so long as it is restricted to the treatment only of physical disorders.
- (iii) In particular, the cause of medical education calls for the treatment of mental cases in the great teaching hospitals. At present, this part of the medical curriculum is admittedly defective, and the invaluable experience which would be gained from the presence of mental patients in the general hospitals cannot fail to have a profound reaction upon the advance of psychological medicine and upon the position of the medical profession in dealing with mental illness.

(d) There is one further aspect which will, no doubt, be present in the minds of those responsible for the Voluntary Hospitals. The majority of mental patients will continue, and rightly continue, to be treated at Mental Hospitals; but the Mental Treatment Act gives expression to a widely-felt desire that certain types of mental cases should have the opportunity of being treated at general hospitals, whether these be voluntary or municipal. Parliament having authorised the provision of these facilities, it is certain that the demand for them will increase, and sooner or later will be met. A reluctance on the part of the Voluntary Hospitals to take the present opportunity of playing their part in this kind of provision for mental treatment, must lead to the provision of it in connection with the establishment of municipal general hospitals by the Local Authorities under the powers conferred on them by the Local Government Act of 1929.

II.

STATUTORY REQUIREMENTS.

If the Voluntary Hospitals are disposed to make provision under the Act, they will wish to know in advance what will be demanded of them in the matter of statutory requirements. These arise from the provisions in the Act and the Rules made by the Board under the Act, and are separately set out in Appendices A and B below*. If there should be a disposition on the part of any hospital authorities to regard these requirements as unduly formidable, the following general considerations should be borne in mind :—

- (a) Many of the records and notifications which are prescribed in the Rules merely repeat the requirements laid down in the Act itself. They are not additional to the requirements of the Act, but are included in the Rules so that the latter may constitute a complete code.
- (b) The records to be kept are such as should not cause any difficulty.
- (c) The visitation of the Voluntary Hospitals will be carried out as a general rule by Medical Commissioners.
- (d) The statutory visitation of temporary patients under section 5 (9) of the Act will be carried out in the Metropolitan area by the Board of Control; and elsewhere by two of the visitors of licensed houses, of whom one will be a medical practitioner.
- (e) By the Rules the Board reserve a general right to call for documents. This is only to safeguard the position of the Board in case they are required, in the exercise of their statutory responsibilities, to investigate the circumstances of a particular case. But they desire to make it abundantly clear that any information which may come into their possession from case notes or other such documents will be treated as confidential.

* Not reproduced.

If the authorities of any hospital are anxious to participate in the treatment of cases under the Act, but feel difficulty in regard to any of the Rules, they are urged to discuss the matter with the Board, who find by experience that individual difficulties of this kind are generally capable of satisfactory adjustment if there is an opportunity of personal discussion.

III.

PRACTICAL SUGGESTIONS.

The Board do not wish to formulate any proposals which could be regarded as a uniform pattern to which every scheme should necessarily conform. The arrangements to be made in any particular hospital will depend largely upon the accommodation that is or can be made available, and the nature of any contract that may be made between the hospital authorities and the Local Authority. It is recognized that such arrangements will present wide variations in detail; and any general principles must be such as will ensure elasticity in application. But at the Conference with representatives of the Voluntary Hospitals, a unanimous request was made that the Board should, if possible, indicate in broad outline what is involved practically by the reception of the mental patients which the Act empowers Voluntary Hospitals to treat; and the Board think that the following general indications may be of service:—

(a) *Out-Patient Treatment.*

Arrangements for the provision of out-patient treatment are comparatively easy. The use of one of the consulting rooms in the existing out-patient department is the chief essential. This room would be required on one morning or afternoon weekly: more often, of course, if the number of attendances required it. But, at large centres, should cases become numerous and necessitate the services of more than one physician, a room for each of them is essential. It may be that at some hospitals the existing rooms are in such constant use as to make it necessary to erect one or more new ones; whatever be the structural provision, it is desirable that the selected room or rooms should, if possible, adjoin the others and not have any separate main approach.

As regards rate-aided patients attending as out-patients, there would normally be a contract with the Local Authority for payment; and this sum might be fixed at a figure which would reimburse the hospital with at least some part of the interest and sinking fund in respect of their capital expenditure, should the erection of a room or rooms prove unavoidable.

In a few towns, a physician in private practice has been appointed Honorary Physician in nervous and mental disorders. It is not suggested that any such existing arrangement should be disturbed. It is, however, well to bear in mind that the nature of the work in question involves the expenditure of considerable time on each case, that probably no doctor can deal with more than about five attendances at each session, and that if out-patient treatment is to be available for the number of cases in need of it, the services of more than one doctor will be required. For these and other reasons, it is very desirable to enlist the co-operation of the senior members of the medical staff of the Mental Hospital which serves the area in which the Voluntary Hospital is situated. It may be convenient to arrange that, where no such appointment has already been made, the Medical Superintendent of the former should be appointed Honorary Physician in nervous and mental disorders to the latter. Reciprocally, it is hoped that members of the honorary staff of the Voluntary Hospital will act as visiting specialists to the Mental Hospital. Reciprocity, too, between the nursing staffs of the two hospitals might prove of mutual advantage.

(b) *In-Patient Treatment, as Voluntary and Temporary Patients.*

If the Voluntary Hospital proposes to undertake the in-patient treatment of either voluntary patients or temporary patients and to secure the protection afforded by the Mental Treatment Act, it would first of all require to be approved by the Board of Control under Section 1 or Section 5 of that Act. For the reception of rate-aided patients in either category, there would be a contract with the Local Authority; and if the provision of additional beds is agreed upon, the Voluntary Hospital could endeavour to arrange with the Local Authority that the maintenance charge should be so adjusted as to take account of interest and sinking fund in respect of the capital expenditure involved in the provision of the beds.

The following practical considerations will arise in regard to the classification, nursing, and treatment of voluntary and temporary patients, respectively :—

Voluntary Patients.—So long as the phase of the mental illness justifies the patient's being treated on the voluntary basis, no special form of accommodation is indicated ; and, unless the hospital contemplates receiving such cases in considerable numbers, there would be no necessity to set apart a ward or part of a ward for their use. Indeed, there may be some disadvantage in drawing attention to these cases by the reservation solely to them of special accommodation. All that is necessary is that the Honorary Physician in nervous and mental disorders should have a few beds in one or more of the medical wards. In some hospitals the shortage of accommodation may be such that even the allotment of a few beds may be impracticable, and ultimately some structural addition may be required. Where, however, there is a real desire to take a step towards providing treatment for mental illness, it is difficult to believe that there is any hospital which, by way of a beginning, could not allot, if it chooses to do so, at least one bed for each sex. Other members of the honorary staff would soon appreciate the advantage of being able to hand over to their new colleague certain difficulties which some of their cases present, and would themselves be glad to see the number of these beds increased.

Once having decided to treat as in-patients a limited number of mental cases, it would be most desirable that some members of the nursing staff—two or more according to the number of beds—besides being fully trained in general nursing, should be registered or certificated in mental nursing. This illustrates the advantages which can accrue from reciprocity between the nursing staffs of the Voluntary and Mental Hospital.

In providing in-patient treatment for mental cases, most hospitals will probably prefer at the start to limit it to voluntary patients. It is, however, well to remember that such a case may lose volition ; and, while it is true that it would be easy to arrange for removal to a mental hospital, the medical staff might be loth to take this step and might like to continue treatment by dealing with the case on the status of a temporary patient. It would, therefore, be an advantage if it could be arranged that at short notice a one-bedded room would be available for such a case. Its structural requirements are not so important as the presence of nurses, with adequate experience in mental nursing, to undertake by night as well as by day the proper nursing of such a patient. Therefore, in seeking approval for the reception of voluntary patients, the hospital may be wise to consider the desirability of including a request for its approval for the reception of a few temporary patients.

Temporary Patients.—Where it is intended to make provision for the treatment of temporary patients, beyond that which may meet the requirements of an occasional case, other considerations arise. Even though the case may be essentially one of physical disease, the mental symptoms dominate the picture, and it can seldom happen that any such patient can be treated suitably in a general ward. Either a ward must be adapted for such cases, or a specially designed unit must be erected or, as some hospitals are contemplating, an adjoining house may be taken and adapted. Adequate separation of the sexes is, of course, necessary. It is not practicable in a memorandum such as this to detail the structural requirements of this unit ; they will vary greatly according to the site or to the nature of the structure already available for adaptation and according to the number of cases it is proposed to accommodate. It would be more helpful and save waste of effort and time if each Voluntary Hospital that contemplates the provision of such a unit would get into touch with the Board of Control, following which one of the Medical Commissioners and, if necessary, the Architect would gladly visit the hospital to discuss the matter.

Speaking generally, it may be pointed out that the treatment of most temporary patients may involve their being some weeks in bed ; and that the experience of the mental hospitals points to the great advantages of giving this treatment in the open-air on verandahs and of administering various forms of hydrotherapy. Manifestly, it would be a misfortune if such patients by obtaining the advantage of residence in a Voluntary Hospital, were to lose any material therapeutic advantage they would have had in a Mental Hospital. Another point of some importance is that in certain types of mental cases the period of convalescence is apt to be protracted and that, in the absence of suitable gardens or grounds, the Voluntary Hospitals may find it difficult to meet the needs of such patients. There are several ways in which this difficulty may be overcome ; but it illustrates both the wisdom of establishing a working arrangement with the Mental Hospital and the necessity of arranging for the selection of patients by a physician skilled in the treatment of mental cases, because not every such patient is suitable for treatment in a Voluntary Hospital.

(c) Generally.

In conclusion, the Board would urge upon the notice of the Voluntary Hospitals, who may decide to provide for mental cases the desirability of considering whether they should not seek the co-operation and help of any University that may be reasonably near their area. Any arrangement in which the Medical Faculty of a University, the Local Authorities and Voluntary Hospitals could combine, might result in a carefully organised scheme extending over a considerable area, in which the Teaching Faculty, the Public Mental Hospitals and the Voluntary Hospitals could co-operate with immense advantage to the classification and treatment of cases, and the distribution of beds and clinical material for purposes of medical education and research.

Hereford C. and Hereford B.	...	Burghill, Hereford	...	G. W. T. H. Fleming, L.R.C.P., D.P.M.	F. Goldingay, The Mental Hospital.
Herts	...	Hill End, St. Albans	...	W. J. T. Kimber, L.R.C.P., D.P.M.	P. E. Longmore, Clerk of the Peace, Hertford.
Kent and Gravesend B.	...	Barming Heath, Maidstone	...	A. C. Hancock, M.C., M.B., D.P.M.	H. J. Bracher,† 44, Earl Street, Maidstone.
"	...	Chartham, Canterbury	...	Lt.-Col. M. A. Collins, O.B.E., M.D.	J. G. Pembroke,† Burgate Street, Canterbury.
Lancaster C., all the County Boroughs and Stockport C.B. (part).	...	Lancaster Moor	...	R. P. Sепhton, L.R.C.P.	Allan Sewart, 49, North Road, Lancaster.
"	"	Rainhill, Lanes.	...	E. F. Reeve, M.B.	T. Garner, 49, Corporation Street, St. Helens.
"	"	Prestwich, Manchester	...	D. Blair, M.D.	Sir Geo. Etherton,‡ County Offices, Preston.
"	"	Whittingham, Preston	...	A. R. Grant, M.D.	L. Cotman, 8, Lune Street, Preston.
"	"	Winwick, Warrington	...	F. M. Rodgers, O.B.E., M.D., D.P.H.	P. I. Dutton, M.B.E., The Mental Hospital.
Leicester C. and Rutland	...	Narborough, Leicester	...	K. K. Drury, M.C., M.D.	W. J. Freer, 10, New Street, Leicester.
Lincoln (Lindsey and Holland), Grimsby C.B. and Lincoln C.B.	...	Bracebridge, Lincoln	...	J. Macarthur, L.R.C.P., D.P.M.	H. E. Page, Bank Street, Lincoln.
" (Kesteven)	...	Sleaford	...	N. K. Henderson, M.B., D.P.M., LL.B.	W. T. Phipps, County Offices, Sleaford.
London C.	...	Banstead Downs, Sutton	...	A. A. W. Petrie, M.D., F.R.C.P., F.R.C.S.E., D.P.M.	R. H. Curtis, Chief Officer, Mental Hospitals Dept., Artillery House, Artillery Row, Victoria Street, S.W.1.
"	...	Bexley, Kent	...	Geoffrey Clarke, M.D.	Ditto ditto.
"	...	Cane Hill, Coulsdon, Surrey	...	G. A. Lilly, M.C., M.D., D.P.M.	Ditto ditto.
"	...	Claybury, Woodford Bridge, Woodford Green.	...	Guy F. Barham, M.D.	Ditto ditto.
"	...	Colney Hatch, New Southgate, N.11	...	John Brander, M.D., M.R.C.P., D.P.M.	Ditto ditto.
"	...	Ewell, Epsom	...	L. H. Wootton, M.C., M.B., D.P.M...	Ditto ditto.
"	...	Hanwell, Southall, Middlesex	...	A. W. Daniel, M.D.	Ditto ditto.
"	...	Horton, Epsom	...	W. D. Nicol, M.B., D.P.M.	Ditto ditto.
"	...	Long Grove, Epsom	...	D. Ogilvy, M.D.	Ditto ditto.
"	...	West Park, Epsom	...	N. Roberts, O.B.E., M.D., D.P.M.	Ditto ditto.
Middlesex	...	Springfield, Beecherroft Road, Tooting, S.W.17	...	Reginald Worth, O.B.E., M.B.	H. S. Freeman, § Clarence Street, Staines.
"	...	Napsbury, St. Albans	...	A. O'Neill, O.B.E., L.R.C.P.	E. S. W. Hart, § Guildhall, Westminster, S.W.1.
Monmouth	...	Abergavenny	...	N. R. Phillips, M.D...	A. F. T. Stewart, The Mental Hospital.
Norfolk	...	Thorpe, Norwich	...	O. G. Connell, M.C., L.R.C.P.	J. Middleton, M.B.E., The Mental Hospital.
Northampton C.	...	Berrywood, Northampton	...	F. J. Stuart, O.B.E., L.R.C.P.	Major C. A. Markham, 1, Guildhall Rd., Northampton
Northumberland and Tynemouth C.B....	...	Cottingwood, Morpeth	...	G. R. East, M.D.	Henry D. Irwin, 54, New Bridge Street, Newcastle-upon-Tyne.
Notts C.	...	Radcliffe - on - Trent, Nottingham	...	H. C. Waldo, L.R.C.P.	J. F. Gell, The Mental Hospital.

† Clerks to the respective Sub-Committees. Clerk to the Kent Mental Hospitals Committee : H. J. Bracher. § Clerks to the respective Sub-Committees. Clerk to the Middlesex Mental Hospitals Committee : H. S. Freeman.
‡Also Clerk to the Lancashire Mental Hospitals Board.
*Clerks to the respective Committees. Clerk to the Hampshire Joint Committee: F. V. Barber, The Castle, Winchester.

COUNTY AND BOROUGH MENTAL HOSPITALS—continued

COUNTIES, UNITED COUNTIES, AND BOROUGH.	WHERE SITUATE.	MEDICAL SUPERINTENDENTS.	CLERKS TO COMMITTEES OF VISITORS.
Oxford C. and Oxford C.B.	Littlemore, Oxford	T. Saxty Good, O.B.E., L.R.C.P.	F. G. Scott, County Hall, Oxford.
Salop, Shrewsbury B., and Wenlock B.	Bicton, Shrewsbury	W. S. Hughes, M.B.	Maj. A. A. Johnson, O.B.E., Shirehall, Shrewsbury.
Somerset and Bath C.B.	Wells	J. McGarvey, M.B., D.P.M.	J. H. Coates,* The Mental Hospital.
" " " "	Cotford, Norton Fitzwarren, Taunton	H. T. S. Aveline, M.D.	A. W. Caley,* The Mental Hospital.
Stafford C., and all the County Boroughs	Stafford	B. H. Shaw, M.D.	Eustace Joy,† M.A., County Buildings, Stafford.
" " " "	Burntwood, Lichfield	W. Reid, M.B.	Ditto ditto.
" " " "	Cheddleton, Leek	W. F. Menzies, M.D., F.R.C.P.	Ditto ditto.
Suffolk (East and West)	Melton, Woodbridge	Lt.-Col. W. B. Keith, M.C., M.D.	C. Oakes, County Hall, Ipswich.
Surrey and Guildford B.	Brookwood, Woking	James A. Lowry, M.D.	D. Aukland, County Hall, Kingston-on-Thames.
Surrey	Netherne, Coulsdon, Surrey	P. C. Coombes, L.R.C.P.	Ditto ditto.
Sussex (East)	Hellingly, Sussex	F. R. P. Taylor, M.D.	Harold M. Blaker, 211, High Street, Lewes.
" (West)	Chichester	C. G. Ainsworth, M.B., LL.B.	E. H. Blaker, 9, West Pallant, Chichester.
Warwick C., Coventry C.B., and Warwick B.	Hatton, Warwick	A. T. W. Forrester, M.D.	H. W. Blenkinsop, 1, New Street, Warwick.
Wight, Isle of	Whitecroft, Newport, I. of W.	C. W. S. Davies-Jones, M.B.	J. H. Green, The Mental Hospital, Newport, I.W.
Wilts	Devizes	S. J. Cole, M.D.	G. W. Jackson, Devizes.
Worcester C., Dudley C.B., and Worcester C.B.	Powick, Worcester	H. F. Fenton, M.B.	J. L. Wood, Bank Buildings, Cross, Worcester.
Worcester C.	Barnsley Hall, near Broms- grove	P. T. Hughes, M.B., D.P.H.	C. H. Bird, Shirehall, Worcester.
York, N. Riding	Clifton, York	J. I. Russell, M.B., F.R.F.P.S., D.P.M.	Alfred Proctor, 5, New Street, York.
" W. Riding, and (except for Scale- bor Park) Barnsley, Bradford, Dewsbury, Doncaster, Halifax, Huddersfield, Leeds, Rother- ham, Sheffield and Wakefield C.B.	Menston, Leeds	S. Edgerley, M.D.	R. M. Bond, Clerk to W.R. Mental Hospitals' Board, Wakefield.
" " " " " " " " " " " "	Wadsley, Sheffield	W. J. N. Vincent, C.B.E., M.B.	Ditto ditto.
" " " " " " " " " " " "	Wakefield	J. S. Bolton, M.D., D.Sc., F.R.C.P.	Ditto ditto.
" " " " " " " " " " " "	Storches Hall, Kirkburton, Huddersfield.	C. W. Ewing, L.R.C.P., D.P.M.	Ditto ditto.
" " " " " " " " " " " "	§Scalebor Park, Burley-in- Wharfedale.	J. R. Gilmour, M.B., F.R.C.P.E.	J. C. McGrath, County Hall, Wakefield.
" " " " " " " " " " " "	Beverley	T. M. Davie, M.C., M.D., D.P.M.	J. R. Procter, County Hall, Beverley.
BOROUGHS.			
Birmingham	Winson Green, Birmingham	C. W. Forsyth, M.D.	F. H. C. Wiltshire, Council House, Birmingham.
" " " " " " " " " " " "	Rubery Hill, near Birming- ham	T. C. Graves, M.D., F.R.C.S.†	Ditto ditto.

Brighton ...	...	...	...	Haywards Heath, Sussex	G. H. Harper-Smith, M.D.	...	Jas. H. Rothwell, C.B.E., Town Hall, Brighton.
Bristol ...	...	...	...	Fishponds, Bristol	E. B. C. White, L.R.C.P.	...	J. Green, The Council House, Bristol.
Canterbury	...	...	...	St. Martin's Hill, Canterbury.	E. F. Sall, L.R.C.P.	...	R. H. Wanklyn, Town Hall, Canterbury.
Cardiff ...	...	...	...	Whitechurch, Glamorgan	P. K. McCowan, M.D., D.P.M.	F.R.C.P.	C. G. Brown, Town Clerk's Office, Cardiff.
Croydon ...	...	...	...	Warlingham, Surrey	H. M. Berncastle, L.R.C.P.	...	J. M. Newnham, Town Hall, Croydon.
Derby ...	...	...	...	Rowditch, Derby	John Bain, M.B.	...	G. T. Lee, Town Hall, Derby.
Exeter ...	...	...	...	Digbys, Topsham	D. McK. Reid, M.D., F.R.F.P.S.	...	C. J. Newman, Town Clerk's Office, Exeter.
Gateshead	...	...	...	Stannington, Newcastle-upon-Tyne.	H. E. Brown, M.B., D.P.M.	...	J. W. Porter, Town Hall, Gateshead.
Hull ...	...	...	...	De la Pole, Willerby, Hull	J. S. Anderson, L.R.C.P.	...	J. R. H. Roberts, Guildhall, Hull.
Ipswich ...	...	...	...	Ipswich	P. Banbury, L.R.C.P., D.P.M.	...	A. Moffat, Town Hall, Ipswich.
Leicester ...	...	...	...	Humberstone, Leicester	Lt.-Col. J. F. Dixon, M.D.	...	H. A. Pritchard, Town Hall, Leicester.
London (City of)	...	...	...	Stone, Dartford	W. Robinson, M.D., D.P.M.	...	L. T. Feldon, 5, Church Passage, Guildhall, E.C. 2.
Middlesbrough	...	...	...	Cleveland, Middlesbrough	H. G. Drake-Brockman, L.R.C.P.	...	Preston Kitchen, Town Clerk's Office, Middlesbrough.
Newcastle-upon-Tyne	...	...	...	Gosforth, Newcastle-upon-Tyne.	H. D. MacPhail, O.B.E., M.D.	...	A. M. Oliver, Town Clerk's Office, Newcastle-upon-Tyne.
Newport ...	...	...	...	Caerleon, Mon.	M. R. Mackay, M.C., M.B.	...	O. T. Morgan, Town Clerk's Office, Newport, Mon.
Norwich ...	...	...	...	Hellesdon, Norwich	David Rice, M.D., D.P.H.	...	Noel B. Rudd, Guildhall, Norwich.
Nottingham	...	...	...	Mapperley Hill, Nottingham.	G. Ll. Brunton, M.D.	...	W. J. Board, Guildhall, Nottingham.
Plymouth	...	...	...	Blackadon, Ivybridge	E. G. T. Poynder, L.R.C.P., D.P.M.	...	R. J. Fittall, Town Clerk's Office, Plymouth.
Portsmouth	...	...	...	Milton, Portsmouth	T. Beaton, O.B.E., M.D., F.R.C.P.	...	F. J. Sparks, Guildhall, Portsmouth.
Sunderland	...	...	...	Ryhope, Co. Durham	M. A. Archdale, M.B., D.P.M.	...	H. Craven, Town Hall, Sunderland.
West Ham	...	...	...	Goodmayes, Ilford, Essex	J. H. Cuthbert, M.B., D.P.M.	...	C. E. Cranfield, Town Hall, West Ham, E.15.
York ...	...	...	...	Fulford, York	R. A. Hooper, M.B.	...	P. J. Spalding, Guildhall, York.

* Clerks to the respective Sub-Committees. Clerk to Somerset and Bath Mental Hospitals Committee: A. W. Caley.

† Also Clerk to the Staffordshire Mental Hospitals Board.

‡ Also Medical Director of the Birmingham Mental Hospital, which comprises Winson Green Division and Rubery Hill with Hollymoor Division.

§ For private patients only.

HOSPITALS.

COUNTY.	REGISTERED HOSPITALS.	MEDICAL SUPERINTENDENTS.
Chester	Manchester · Royal Hospital, Cheadle.	J. A. C. Roy. M.B.
Devon	Wonford House, Exeter ...	H. W. Eddison, M.D., D.P.M.
Gloucester ...	Barnwood House, Gloucester ...	A. A. D. Townsend, M.D.
Kent	*Bethlem Royal Hospital, Eden Park, Beckenham.	J. G. Porter Phillips, M.D., F.R.C.P.
Lincoln	The Lawn, Lincoln	Mary R. Barkas, M.D., D.P.M.
Norfolk	Bethel Hospital, Norwich ...	S. J. Fielding, M.B.
Northampton ...	St. Andrew's Hospital, Northampton.	D. F. Rambaut, M.D.
Notts	The Coppice, Nottingham ...	D. Hunter, M.B.
Oxford	The Warneford, Headington Hill, Oxford.	A. W. Neill, M.D.
Stafford	Coton Hill Hospital, Stafford	R. Macdonald, O.B.E., M.D., D.P.M.
Surrey	Holloway Sanatorium, St. Ann's Heath, Virginia Water.	H. Devine, O.B.E., M.D., F.R.C.P.
York City (N.R.)	Bootham Park, York	G. R. Jeffrey, M.D., F.R.C.P.E.
„ „ (E.R.)	The Retreat, York	Neil Macleod, M.D., D.P.M.
MILITARY AND NAVAL HOSPITALS :		
Hants	Royal Military Hospital, Netley, Southampton.	Maj. H. Gall, L.R.C.P.
Norfolk	Royal Naval Hospital, Yarmouth.	Surgeon-Commander F. L. H. McDowel, R.N., L.R.C.P. & S
CRIMINAL ASYLUM :		
Berks	State Criminal Asylum, Broadmoor, Crowthorne.	H. P. Foulerton, L.R.C.P., D.P.H.

* Registered for 109 males and 141 females.

HOUSES.		Number of Patients for which Licensed.			TO WHOM LICENSED.
		M.	F.	Total.	
For both Sexes : Camberwell, S.E. 5	...	Not more than 140 | 300 | 420			Colonel R. H. W. Cardiff, Captain J. A. E. Drury-Lowe, and H. J. Norman, M.B., D.P.H. G. H. Johnston, L.R.C.P., H. E. Monro and E. E. Rollins, M.B.
	Clapton, Upper, E. 5	...	...	80	
Finsbury Park, N. 4	...	Not more than 37 | 63 | 95			A. H. Stocker, H. G. Stocker, and F. Dillon, M.D.
Hayes, Uxbridge ...	...	Not more than 2 | 19 | 19			H. F. Stilwell, L.R.C.P., and Mrs. M. E. Stilwell.
Hillingdon, Uxbridge	...	Not more than 48 | 10 | 48			R. J. Stilwell, L.R.C.P., and G. W. B. James, M.C., M.D., D.P.M.
Isleworth ...	...	25 | 20 | 45			G. W. Smith, O.B.E., M.B., and Mrs. S. R. M. Smith, M.B.
Peckham, S.E. 15	...	Not more than 115 | 265 | 360(a)			A. H. Stocker, H. G. Stocker, and F. R. King, L.R.C.P.
Pinner, Middlesex...	...	Not more than 17 | 20 | 35			W. J. Coyne, M.D., D. I. O. Macaulay, M.D., D.P.M., Miss H. E. Ash, Miss A. E. Curthoys, and Edith Chalmers, M.B.
Roehampton, S.W. 15	...	Not more than 47 | 48 | 90			G. B. Postlethwaite, Brig.-Gen. H. Karslake, C.M.G., D.S.O., G. H. Day, J. Chambers, M.B., and B. W. Brown, M.B., D.P.M.
Shepperton...	...	Not more than 15 | 17 | 30			Capt. H. O. S. Ellis, Lt.-Col. H. Dickenson, W. J. H. Haslett, L.R.C.P., Miss A. E. Bartlett and A. Holman.
Tooting Common, S.W. 17	...	Not more than 21 | 22 | 28			J. N. Sergeant, M.B., E. G. Sergeant, Mrs. H. S. Sergeant, Miss M. F. Simms-Reeve, and Miss E. Reid.
Males only : Beckenham Lane, Catford, S.E. 6.	...	32	—	32	Col. W. H. F. à Beckett, Mrs. Enid à Beckett, W. F. Umney, M.D., D.P.M., and C. R. Menzies.

* Approved under Sec. 5 of the Mental Treatment Act, 1930, for the reception of Female Temporary Patients.

† Approved under Sec. 5 of the Mental Treatment Act, 1930, for the reception of Male Temporary Patients.

(a) Of whom 65 may be rate-aided patients : not more than 30 males and 45 females.

METROPOLITAN LICENSED HOUSES—*continued*.

HOUSES.		Number of Patients for which Licensed.			TO WHOM LICENSED.
		M.	F.	Total.	
Females only:					
Clapham Park, S.W. 4	J. A. Thwaites, Miss L. E. Thwaites, and Miss L. M. Thwaites.
Hayes, Uxbridge	H. F. Stilwell, L.R.C.P., and R. J. Stilwell, L.R.C.P.
"	R. J. Stilwell, L.R.C.P., Miss R. Cheek, and G. W. B. James, M.C., M.D., D.P.M.
Hendon, N.W.	H. R. S. Walford, L.R.C.P., Mrs. Walford, and A. C. Loader.
Streatham Hill, S.W. 2	E. W. White, C.B.E., M.B., M.R.C.P., Mrs. H. White, and J. H. Earls, M.D.
Sydenham, S.E. 26	Capt. F. H. Little, Miss E. B. Brodie, and Mrs. M. A. H. Little.
Forest Hill, S.E. 23	W. L. Bailey and Mrs. L. M. Robinson.

q. Limited to quiet and harmless cases.

* Approved under Sec. 5 of the Mental Treatment Act, 1930, for the reception of Female Temporary Patients.

PROVINCIAL LICENSED HOUSES.

of the Board of Control.

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COUNTY.	HOUSES.	TO WHOM LICENSED.	Number of Patients for which Licensed.			CLERK TO VISITORS.	MEDICAL VISITORS.
			M.	F.	T.		
Beds [Bedford Borough]	Bishopstone House, Bedford	Mrs. Beatrice Peele, Miss B. C. Peele, Mrs. D. M. Sutton, Miss M. Rogers, Miss D. Palmer, and Miss A. George.	—	10	10	G. J. M. Whyley, Bedford.	H. M. Coombs, M.B.
Beds ...	*†Springfield House, Bedford	Mrs. M. L. Bower, C. W. Bower, L.M.S.A., Mrs. M. A. E. Bower, and Miss G. E. P. Hookey.	Not more than 24	37	48	J. B. Graham, ditto	E. C. Sharpin, L.R.C.P.
Derby ...	*Wye House, Buxton ...	W. W. Horton, M.D., and Miss J. M. Dickson.	22	22	44	W. B. Bunting, Chapel-en-le-Frith.	W. Shipton, M.D.
Devon ...	*Court Hall, Kenton, Exeter	Miss B. M. Mules, M.D., and Miss A. S. Mules, L.R.C.P.	—	8	8	F. A. Pearce, Exeter	L. P. Black, M.B., D.P.H.
„ ...	*Plympton House, Plympton.	J. C. Nixon, M.B.	18	26	44	R. B. Johns, Plymouth	E. L. Fox, M.D.
Durham ...	*†Middleton Hall, Middleton St. George.	R. H. O. Garbutt, L.R.C.P., T. C. Barkas, O.B.E., M.B., and J. W. Astley-Cooper, L.R.C.P.	21	44	65	G.H. Watson, Darlington	T. Beattie, M.D., F.R.C.P.
Essex ...	*Littleton Hall, Shenfield, Brentwood.	Miss M. G. E. Wilson, H. G. L. Haynes, L.R.C.P., and Mrs. M. Haynes.	—	25	25	H. F. Bawtree, Witham	R. W. Quennell, O.B.E., L.R.C.P.
Gloucester ...	*†Northwoods, Winterbourne Bristol.	J. D. Thomas, M.B., H. J. Cates, M.D., and Mrs. R. Cates.	—	—	(a) 50	L. M. Harris, 65, Stokes Croft, Bristol.	{ J.R. Charles, M.D., F.R.C.P., and P. L. Moore, M.B.
„ ...	*The Retreat, Fairford	A. C. King-Turner, M.B., C. J. King-Turner, and Miss E. King-Turner.	—	—	(b) 50	Robert W. Ellett, Cirencester.	D. G. Cossham, M.B.

(a) Not more than 30 females.

(b) Not more than 25 males.

* Approved under Sec. 5 of the Mental Treatment Act, 1930, for the reception of Female Temporary Patients.

† Approved under Sec. 5 of the Mental Treatment Act, 1930, for the reception of Male Temporary Patients.

PROVINCIAL LICENSED HOUSES—*continued.*

COUNTY.	HOUSES.	TO WHOM LICENSED.	Number of Patients for which Licensed.			CLERK TO VISITORS.	MEDICAL VISITORS.
			M.	F.	T.		
Kent -	*†Malling Place, Malling, Kent.	G. H. Adam, L.R.C.P., and H. Gray, L.R.C.P.	18	21	(a) 39	C. E. Warner, Tonbridge	{ W. M. Ramsden, M.D. Hy. A. Andrews, L.R.C.P.
Lancaster -	*†Haydock Lodge, Ashton, Newton-le-Willows.	C. T. Street, L.R.C.P., Mrs. Mabel R. Street, J. C. Wootton, M.C., L.R.C.P., Mrs. M. Wootton, Mrs. E. Mould, and F. M. Seal, M.B.	Not more than 80	90	150	H. Hatton, Warrington	H. Langdale, M.D.
" [Liverpool City].	†Tue Brook Villa, Liverpool	J. J. Tisdall, L.R.C.P., C. J. Tisdall, M.B., J. M. Moyes, M.B., and Mrs. A. E. B. Moyes.	Not more than 38	26	52	C. T. Barton, Clerk to Justices, Liverpool.	{ R. I. Richardson, M.P. T. Clarke, M.D.
Lancaster -	*Shaftesbury House, Formby, Liverpool.	Mrs. F. W. Gill, Mrs. E. M. Gill, John W. Jones and W. J. A. Erskine, M.D.	Not more than 10	40	40	G. W. Swift, 74, Hanover St., Liverpool.	H. Langdale, M.D.
Norfolk [Norwich City].	*†Heigham Hall, Norwich	J. A. Small, M.B., and Maj. D. D. Milne.	40 (b)	55	95	J. F. Betts, Norwich	H. J. Starling, M.D.
"	*The Grove, Catton Grove Road, Norwich.	Miss F. R. McLintock, and Miss H. M. McLintock.	—	21	21		
Shropshire	†Stretton House, Church Stretton.	J. C. Baker, M.B., S. T. H. Lane, and Mrs. E. M. Gossage.	40	—	40	W. Baxter, Shirehall, Shrewsbury.	H. W. Gardner, M.B.E., M.D., F.R.C.P.

Shropshire ...	*Grove House, All Stretton	J. McClintock, L.R.C.P., Mrs. F. E. G. McClintock, Miss G. M. T. Daniell and Mrs. G. M. Lane.	—	40	40	W. Baxter, Shirehall, Shrewsbury.	H. W. Gardner, M.B.E., M.D., F.R.C.P.
„	Boreatton Park, Baschurch, near Shrewsbury.	E. H. O. Sankey, M.B., and Mrs. K. M. O. Miller.	12	18	30	Ditto	Ditto.
Somerset ...	*†Brislington House, Bristol	Mrs. A. Fox, J. M. Rutherford, M.B., and F. E. Fox, L.R.C.P.	44	62	106	C. E. Newman, 14, Boulevard, Weston-super-Mare.	R. E. Moorhead, L.R.C.P., J. R. Charles, M.D., J. Wallace, O.B.E., M.B., John Allen, M.B., and W. H. Maidlow, M.D.
„	*Bailbrook House, Bath-easton.	Col. H. A. Bray, C.B., C.M.G., L.R.C.P., E. M. Wright, and S. J. Gillilan, O.B.E., M.B.	Not more than 11	36	44		
Stafford ...	*Ashwood House, Kingswinford, Dudley.	H. G. Peacock, L.R.C.P., and J. F. G. Pietersen, L.R.C.P.	11	20	31	Eustace Joy, County Buildings, Stafford.	C. Reid, O.B.E., M.B.
„	Moat House, Tamworth	W. Lowson, M.B., and Miss G. J. Baylis.	—	16	16	Ditto	Ditto.
Surrey ...	The Silver Birches, Church-street, Epsom. ...	Miss M. L. Oxford and E. G. C. Daniel, M.B.	—	14	14	D. Auckland, County Hall, Kingston-on-T.	H. Thwaites, L.R.C.P.
Sussex, East	*†Ticehurst House ...	C. F. F. McDowall, M.D., H. A. H. Newington, D. H. Cooper and H. McMahon.	43	49	92	H. J. T. McIlveen, County Hall, Lewes.	J. W. McK. Nicholl, M.B.
„	*St. George's Retreat, Burgess Hill.	Miss Ward, Miss McEvoy, Miss Stoker, and Miss Collins.	—	75	75	Ditto	Ditto.
„	Periteau House, Winchelsea, Sussex.	H. Baird, M.D., and Mrs. I. M. Baird	—	5	5	Ditto	Ditto.
„ [Hastings Borough]	Ashbrook Hall, Hollington	Charles E. H. Somerset and Mrs. E. M. Somerset.	—	q. 6	6	F. G. Langham, 44A, Robertson-street, Hastings.	E. M. Barker, M.B.
Warwick ...	*Glendossill, Henley-in-Arden.	W. Agar, L.R.C.P., Mrs. Mary D. Agar and Miss E. M. McKay.	12	33	40	A. C. Burrows, 1, New Street, Warwick.	W. R. W. Asplen, M.D.
Wilts [New Sarum City].	*†The Old Manor, Salisbury	Sir Cecil H. E. Chubb, Bart., LL.B., S. E. Martin, M.B., and P. W. Carruthers, M.B.	—	—	672	A. C. Jonas, Salisbury...	E. T. Fison, O.B.E., M.D., F.R.C.S., and R. C. Monnington, M.D.

q. Limited to quiet and harmless cases.

(a) Proportion of sexes may be varied.

(b) Of whom 15 may be rate-aided patients.

* Approved under Sec. 5 of the Mental Treatment Act, 1930, for the reception of Female Temporary Patients.

† Approved under Sec. 5 of the Mental Treatment Act, 1930, for the reception of Male Temporary Patients.

PROVINCIAL LICENSED HOUSES—continued.

COUNTY.	HOUSES.	TO WHOM LICENSED.	Number of Patients for which Licensed.			CLERK TO VISITORS.	MEDICAL VISITORS.
			M.	F.	T.		
Wilts	*†Laverstock House, Salisbury.	J. R. Benson, F.R.C.S., H. Hill, M.D., and Miss M. Collins.	Not more than 50	50	70	W. L. Bown, Trowbridge	A. W. K. Straton, L.R.C.P.
"	*†Fiddington House, Market Lavington, Devizes.	J. R. Benson, F.R.C.S., Mrs. May Benson, Lt.-Col. C. B. Benson, D.S.O., and the Rev. E. Benson.	Not more than 25	25	30	Ditto	G. S. A. Waylen, L.R.C.P.
"	*Kingsdown House, Box ...	H. C. MacBryan, L.R.C.P., and Mrs. A. K. MacBryan.	Not more than 13	43	43	Ditto	A. D. Hamilton, M.D.
York, W.R.	Greta Bank, Burton-in-Lonsdale, Kirkby Lonsdale.	Miss Sarah J. Perkin, J. C. Wootton, M.C., L.R.C.P., Mrs. Edith Mould, and C. T. Street, L.R.C.P.	10 or 10	10	10	W. H. Coles, Wakefield	L. T. Wells, L.R.C.P.
"	*The Grange, Kimbworth, Rotherham.	G. E. Mould, L.R.C.P., and Mrs. B. L. Mould.	—	20	20	C. L. des Forges, Rotherham.	W. Barr, M.D.
" [Rotherham Borough]							
York City	*†The Pleasaunce, Heworth, York.	L. D. H. Baugh, M.B., and Mrs. J. S. Baugh, M.B.	Not more than 9	17	22	H. V. Scott, York	J. Acomb, M.D.

* Approved under Sec. 5 of the Mental Treatment Act, 1930, for the reception of Female Temporary Patients.

† Approved under Sec. 5 of the Mental Treatment Act, 1930, for the reception of Male Temporary Patients.

APPENDIX C.
 INSTITUTION PROVIDED BY A LOCAL AUTHORITY FOR VOLUNTARY PATIENTS ONLY.

Name of Institution.	Address.	Medical Superintendent.	Owning Authority.
Maudsley Hospital	Denmark Hill, London, S.E.5	E. Mapother, M.D., F.R.C.S., F.R.C.P.	London County Council.

APPENDIX D.
 HOSPITALS APPROVED FOR THE RECEPTION OF VOLUNTARY AND TEMPORARY PATIENTS.

Name of Hospital.	Address.	Number of Patients for which approved.			Person in Charge.
		M.	F.	T.	
Hull Royal Infirmary*	Hull.	—	—	—	J. S. Anderson, L.R.C.P.
St. John's Hospital	Morden Hill, Lewisham, S.E.13.	1	1	2	J. C. Gilbert.

APPENDIX E.
 NURSING HOMES APPROVED FOR THE RECEPTION OF VOLUNTARY AND TEMPORARY PATIENTS.

Name of Nursing Home.	Address.	Number of Patients for which approved.			Name of Proprietor.
		M.	F.	T.	
Silverton Lodge	118, Church Road, Upper Norwood, S.E.19.	—	4	4	Miss Margaret B. Macleod.
Riverhead House	Sevenoaks, Kent	—	8	8	Mrs. M. L. Macartney.
Tykeford Abbey	Newport Pagnell, Bucks.	—	6	6	D. E. M. Douglas-Morris, L.M.S.S.A.
Dorset House	Clifton Down, Bristol.	—	20	20	Miss E. Casson, M.D., D.P.M.
Angle House	Beauchamp Road, Molesey.	—	—	17	H. Lloyd Driver, L.R.C.P.
Mount Pleasant	Clevedon, Somerset.	—	3	3*	Mrs. N. C. Whitfeld.
The Hall	Harrow Weald.	—	—	2	E. Lincoln Williams, L.R.C.P.
Boughton Hall	Chester.	—	6	6	C. J. Tisdall, M.D.
Arthington	Barton Road, Torquay.	—	—	4	Messrs. Arthington, Ltd.

* Voluntary only.

APPENDIX F.

STATE and CERTIFIED INSTITUTIONS, CERTIFIED HOUSES, and APPROVED HOMES under the MENTAL DEFICIENCY ACT, 1913, with the Names of Managers or Owners, Clerks to Visitors, and the Number and Class of Patients.

(Corrected to July, 1932.)

STATE INSTITUTIONS.

COUNTY or COUNTY BOROUGH within which the Institution is situated	Name and Address of Institution.	Names of Managers or Owners.	Name of Superintendent.	Number and Class of Defectives.
Nottingham ...	Rampton, Retford ...	The Board of Control, Caxton House West, London, S.W.1.	F. E. E. Schneider, M.D., D.P.M.	376 males and 253 females of dangerous or violent propensities.
Warwick ...	Warwick State Institution, The Cape, Warwick.	Do. do.	Miss E. Bagley.	53 females of dangerous or violent propensities.

CERTIFIED INSTITUTIONS.

COUNTY or COUNTY BOROUGH within which the Institution is situated C.B. = County Borough.	Name and Address of Institution.	Names of Managers or Owners.	Clerk to Visitors.	Number and Class of Defectives.
Bedfordshire ...	Bromham House, Bromham, Bedford	Beds. and Northants Joint Board.	J. B. Graham, Shire Hall, Bedford.	24 high grade adult males.
Berkshire ...	Cumnor Rise, Cumnor	The Oxford Branch of the National Association for Promoting the Welfare of the Feeble-minded. Hon. Sec. of Branch :—Hon. P. Bruce, 4, Wellington Place, St. Giles, Oxford. Middlesex County Council.	H. J. C. Neobard, Shire Hall, Reading. Do. do.	34 feeble-minded females, not more than 5 of whom are to be private patients. The age of admission is from 14 years. Epileptics and fallen women not taken. Poor Law cases received. 102 adult females and 14 juveniles.
Bucks ...	Craufurd Home, Maidenhead The Manor House, Aylesbury	The Bucks M.D. Committee.	H. Fisher, County Hall, Aylesbury.	99 patients.

COUNTY or COUNTY BOROUGH within which the Institution is situated C.B. = County Borough.	Name and Address of Institution.	Names of Managers or Owners.	Clerk to Visitors.	Number and Class of Defectives.
Carmarthen ..	Pantglas Hall, Llanfynydd Road, Carmarthen.	The West Wales Joint Board ...	J. W. Nicholas, County Offices, Carmarthen.	90 females of 7 years of age and upwards. Trainable cases only.
Cheshire ...	Ashton House (Seaside Laundry Home), Parkgate, Chester. Sandlebridge, Alderley Edge.*	Committee of Management ...	E. W. T. Gasking, Birkenhead.	40 high-grade feeble-minded girls. Admission over 14 years of age.
Cornwall...	Convent of the Good Shepherd, St. Anne's, Saltash.	Incorporated Lanes and Cheshire Society for the Permanent Care of the Feeble-minded. Sec.:—E. M. Richards, 72, Bridge Street, Manchester.	G. C. Scrimgeour, Northgate Street, Chester.	378 of either sex.
Cumberland ... (Carlisle C.B.)	Durran Hill House, Carlisle.	Committee of Management ...	F. A. H. Sheers, Truro.	<i>Certified by Board of Education for 65 boys and 44 girls.</i> 10 Roman Catholic female adults. High or medium grade.
Derby ...	Dovenby Hall Colony, Cockermouth. Aston Hall, Aston-upon-Trent.	Westminster Diocesan Education Fund ... Sec.:—Archbishop's House, Victoria Street, London, S.W.1.	F. G. Webster, 15, Fisher Street, Carlisle.	65 feeble-minded Roman Catholic females, aged 16 years and over. Criminals and fallen women not accepted. Poor Law cases received.
Derby ...	Whittington Hall (Midland Counties Institution), Chesterfield.†	Cumberland, Westmorland & Carlisle Joint Committee for the Mentally Defective. Nottingham City Council ...	C. W. A. Hodgson, The Courts, Carlisle. W. B. Bunting, Chapel - en - le - Frith. Do. do.	120 males and 65 females. 108 females. 400 females.
Derby ...	Thornhill, Trowels Lane, Derby.	The Incorporation of National Institutions for Persons requiring Care and Control. Mrs. Burden, The Warden, 14, Howick Place, Victoria Street, London, S.W.1. Derby Borough Corporation ...	W. R. H. Whiston, Idridgebay, Derby.	39 females. Not more than 33 able-bodied imbeciles under 16 and not more than 6 feeble-minded adults.
Devon ... (Exeter C.B.)	The Devon and Exeter Home of the Good Shepherd, Holloway Street, Exeter; <i>with ancillary premises:</i> The Chantry, Exeter; <i>and</i>	Committee of Management ...	J. I. Pengelly, The Court House, Exeter.	131 feeble-minded females. 66 at Devon and Exeter Home, 21 at The Chantry, and 44 (27 cot and chair cases of either sex and 17 high or medium grade females over 16 years of age) at the Home of the Holy Innocents.

* Certified as a Special School by Board of Education.

† Certified as a Special Industrial School by Home Secretary.

CERTIFIED INSTITUTIONS—continued.

COUNTY or COUNTY BOROUGH within which the Institution is situated C.B. = County Borough.	Name and Address of Institution.	Names of Managers or Owners.	Clerk to Visitors.	Number and Class of Defectives.
(Plymouth C.B.)	The Home of the Holy Innocents, Franklyn, St. Thomas, Exeter. Hampton House, Ebrington St., Plymouth. Stoke Lyne, Withycombe, Exmouth. Royal Western Counties Institution, Starcross, near Exeter; * <i>with ancillary premises</i> : Elm Court, Starcross, 2 temporary villas, Starcross, 13, Dix's Field, Exeter, and Langdon Farm, Dawlish.	The Committee of the Plymouth, Devonport and Stonehouse Penitentiary and Home. County Council of Devon ... Committee of Management ...	J. Bone, Guildhall, Plymouth. F. A. Pearce, 14, Castle Street, Exeter. Do. do.	20 female adults. 53 males and 4 females. All classes within the meaning of the Act. 420 males and 214 females. <i>Certified by Board of Education for 83 boys and 52 girls.</i>
Durham ...	Monkton Hall Home for Lads, Monkton, Jarrow-on-Tyne. St. Catherine's Home, Allergate, Durham. Shotley Bridge Colony, Shotley Bridge, Durham.	The Committee of the North-Eastern Association for the Care of the Feeble-minded. Sec.:—J. Stewart, 90, Pilgrim Street, Newcastle-upon-Tyne. Committee of Management ... The Newcastle-upon-Tyne Mental Deficiency Committee.	G. H. Watson, Darlington. Do. do. Do.	79 male feeble-minded cases. Age on admission, 16 to 20 years. 8 females. Feeble-minded and moral, under the age of 18 years at time of admission. 400 males and females, all classes.
Essex ...	Bigod's Hall, near Dunmow, Essex.*	Committee of Management ...	H. F. Bawtree, Witham.	6 males. Imbeciles and feeble-minded up to the age of 16 years. <i>Certified by Board of Education for 61 boys.</i>

Essex---cont.	...	Brunswick House, Mist- ley.	The L.C.C. Mental Hospitals Committee... Chief Officer, Mental Hospitals Dept., Artillery House, Artillery Row, Victoria Street, S.W.1.	Do.	do.	75 males, not less than 16 years of age. Reserved for London cases only.
		The Mutual Sana- torium (New Lodge, Leon House, The Homestead and St. Keverne), Billericay.	The Mutual Sanatoria, Ltd. ... Lodge, Sec.:—E. L. Coppin, New Billericay.	Do.	do.	54 males, excepting those who are dangerous to themselves or others, runaways, or who require physical restraint and are unsuitable for care on the "open-door" system.
		Etloe House, Church Road, Leyton, E.10.	<i>Corresponding Manager</i> :—The Right Rev. Mgr. W. O'Grady, St. George's, Wal- thamstow, E.17.	Do.	do.	103 feeble-minded females, from 16 years of age and of the Roman Catholic religion. Poor Law cases received.
		Royal Eastern Counties Institution, Colches- ter,* with ancillary premises: Lexden House, Colchester; East Hill House School, Colchester; Hillsleigh, 10, East Hill, Col- chester; Greenwood Schools, Halstead; Crossley House, Clac- ton; Bridge Home, Witham; The Re- treat, Witham; and Littleton House School, Girton, Cambridge.	Board of Directors (Medical Superintendent: F. D. Turner, M.B.)	C. W. Denton, 9, East Stockwell Street, Colchester.		1,217 males and females. <i>Certified by Board of Education for 139 boys or girls.</i>
		Walsham How Home, 1, Forest Rise, Wal- thamstow, E.17.	The Church Army. Hon. Secretary:— Mrs. Cannon, 57, Bryanston Street, Marble Arch, W.1.	A. Tabrum, Cambridge.		Main institution—558 males and females. Lexden House—65 adult females. East Hill House—60 males, of whom 4 may be cases over 16 years of age. Hillsleigh—48 boys of school age. Greenwood—90 females. Crossley House—61. Bridge Home—291 adult males. The Retreat—33 males.
		Girls' Village Homes, Barkingside, with ancillary premises: Warlies, Upshire, Wal- tham Cross.	Dr. Barnardo's Homes National Incorpo- rated Association	Do.	do.	Littleton House—11 males.
		The Colony, South Ockendon.	West Ham County Borough Council.	Do.	do.	45 female adults, feeble-minded and moral defectives.
				Do.	do.	150 females, imbecile and feeble minded from 5 years of age. 65 high to medium grade adult females.
				Do.	do.	84 male and 30 female adults, and 20 juvenile females.

* Certified as a Special School by Board of Education. † Certified as a Special Industrial School by Home Secretary.

CERTIFIED INSTITUTIONS.—continued.

COUNTY OR COUNTY BOROUGH within which the Institution is situated C.B. = County Borough.	Name and Address of Institution.	Names of Managers or Owners.	Clerk to Visitors.	Number and Class of Defectives.
Flint ...	Coed Du Hall, Rhydymwyn, Mold.	Denbigh M. D. Committee. ...	H. A. Tilby, County Offices, Mold.	43 adult and 19 juvenile females.
Glamorgan ...	Drymma Hall, Skewen, near Neath.	Glamorgan County Council (Medical Superintendent: E. Lewis, F.R.F.P. & S.G., L.R.C.P. & S.) ...	W. G. Jenkins, County Hall, Cardiff.	79 females. All classes within the meaning of the Act.
	Hensol Castle, Pontyclun, Glam.	Glamorgan County Council (Medical Superintendent: Edward Lewis, F.R.C.P.) ...	Do. do.	100 high to medium grade adult males.
Gloucester ...	Brentry Certified Institution, Westbury-on-Trym, Bristol. ...	Board of Management ... Hon. Sec.:—E. R. Abbott, 13, Victoria Street, London, S.W.1. (Medical Superintendent: G. R. A. de M. Rudolf, M.R.C.P., D.P.M.) The Committee of Management ...	L. M. Harris, 65, Stokes Croft, Bristol.	327. All classes within the meaning of the Act, being males over the age of 18 years.
	St. Mary's Home, Painswick, near Stroud.		E. T. Gardom, O.B.E., Shire Hall, Gloucester.	29 female feeble-minded cases. Age on admission 14 to 25 years, and of the Church of England. Cases over the age of 25 to be received only with the previous consent of the Board.
	Hortham Colony, Almondsbury, Bristol.	Bristol City Council. (Medical Superintendent: W. Wyatt, M.B., D.P.M.)	L. M. Harris, 65, Stokes Croft, Bristol.	304 of each sex.
	Stoke Park, Bristol, with ancillary premises: Royal Victoria Home, Horfield, Bristol; Clevedon Hall, Clevedon, Somerset; Beech House and Heath House, and Hanham Hall, Hanham; Leigh Court, Abbot's Leigh, near Bristol; The Tower Block; and The Elms, Stapleton.	The Incorporation of National Institutions for Persons requiring Care and Control. Mrs. Burden, The Warden, 14, Howick Place, Victoria Street, London, S.W.1. (Director of Medical Services: R. J. A. Berry, M.D., F.R.C.S., Ed.).	Do. do.	Patients. Stoke Park ... 750 Royal Victoria Home ... 42 Clevedon Hall ... 108 Males. Beech House ... 90 Heath House ... 88 Hanham Hall ... 240 The Tower Block ... 130 Females. Leigh Court ... 260 The Elms† ... 40 Total not to exceed ... 1,748

				Males Females Class :—All classes within the meaning of the Act.
(Bristol C.B.)	Chasefield Laundry Home, 874, Fishponds Road, Bristol.	The Sub-Committee of the Bristol Pre- ventive Mission (for the management of Chasefield). Hon. Secs.:—Miss Alice Mary Lavington and Miss Clara E. Sheppard, Stoberry Lodge, 18, Ashgrove Road, Redland, Bristol.	S. Young, Petty Ses- sional Court House, Bristol.	898 1,000 Poor Law cases received.
(Do.)	The Royal Fort Home, St. Michael's Hill, Bristol	The Committee of the Bristol Preventive Mission.	Do. do.	30 females. High grade adults on licence from other Certified Institu- tions.
Hampshire ...	Coldeast Colony, Saris- bury, Southampton.	Hampshire Joint Mental Health Institu- tions Committee.	F. V. Barber, The Castle, Winchester.	60 male juveniles and 87 female adults.
	Tatchbury Mount Col- ony, West Totton.	Ditto.	Do. do.	56 male adults.
	St. Mary's Home, Alton, Hants, with ancillary premises :	Sisters of the Community of St. Mary the Virgin, of Wantage, Berks.	F. V. Barber, The Castle, Winchester.	45 females over the age of 16 years, who may have had illegitimate children. Poor Law cases received.
	The Home of the Holy Rood, Worthing; Thorpe Place, Thorpe, Chertsey, Surrey ;		S. Thornely, County Hall, Chichester. D. Aukland, County Hall, Kingston-on- Thames.	Not more than 14 at the Home of the Holy Rood. 8 high-grade adult females.
	St. Mary's Home, Halton, Hastings;		F. G. Langham, Palace Chambers, White Rock, Hastings.	8 high grade females between the ages of 16 and 40 years.
	St. John's Hostel, 17, Grove Park, Denmark Hill, S.E.5.		John Dix, Sessions House, Newing- ton, S.E.1.	6 high grade adult females.

† Blind patients.

CERTIFIED INSTITUTIONS—continued.

COUNTY or COUNTY BOROUGH within which the Institution is situated C.B. = County Borough	Name and Address of Institution.	Names of Managers or Owners.	Clerk to Visitors.	Number and Class of Defectives.
Hampshire—contd.	Mount Tabor, Darlington Road, Basingstoke.	The Sisters of the Transfiguration ...	F. V. Barber, The Castle, Winchester.	50 feeble-minded females 16 years of age and over. Church of England cases only.
Herts ...	Hillside, Buntingford, Herts.	Westminster Diocesan Education Fund ... Sec. :—Archbishop's House, Westminster, London, S.W.1.	P. E. Longmore, Hertford.	48 males suitable to be housed and instructed with children, for whom the school is primarily intended.
	Barvin Park (St. Raphael's), Northaw, Potter's Bar.	The Brothers Hospitallers of St. John of God.	Do. do.	43 feeble-minded adult males of the Roman Catholic religion.
	The Middlesex Colony, Harper Lane, Shenley, St. Albans.	Middlesex County Council.	Do do.	320 males.
	Kingsmead Schools, Ware Road, Hertford.*	Managers appointed by the Herts County Council.	Do. do.	22. All classes. 10 adult females and 12 of an age and degree of mental defect such as would permit of their being housed and instructed with children, for whom the School is primarily intended. <i>Certified by Board of Education for 70 boys and 56 girls.</i>
	St. Elizabeth's Home for Epileptics, Much Hadham.*†	The Very Rev. Canon Sutcliffe, F. W. Sherwood, Esq., S. Moorat, Esq., Dr. C. H. Cockran, Miss M. M. Sutcliffe, and Mrs. F. P. Hobson. Sec. :—Archbishop's House, Westminster, S.W.1.	Do. do.	School—3 males and 3 females. <i>Certified by Board of Education for 14 boys and 42 girls, and by the Home Office for 56 cases.</i>
Kent ...	Princess Christian's Farm Colony, Hildenboro', Kent.	National Association for the Feeble-minded, 72, Denison House, 296, Vauxhall Bridge Road, Westminster, S.W.1.	C. E. Warner, Tonbridge.	<i>Colony</i> —104 females. Idiots, imbeciles, and feeble-minded cases of the Roman Catholic religion. 71 males, 68 females.
	West View, Tenterden.	Kent County Council.	E. Herrin, Tenterden.	179 females.
	Leybourne Grange, West Malling, Maidstone.	Do. do. (Medical Superintendent: R. F. Jarrett, F.R.F.P.S.)	C. E. Warner, Tonbridge.	94 adult females.

Lancashire	...	Adcote (Laundry and Training Home), Pilch Lane, Knotty Ash, Liverpool.	Adcote Committee ... Hon. Sec.:—Mrs. R. M. Weeks, The Grove, Gatacre, Liverpool	C. T. Barton, Clerk to Justices, Liverpool.	19 high-grade feeble-minded girls; age on admission over 14 years. Roman Catholics not received.
(Liverpool C.B.)		Allerton Priory R.C. Special (M.D.) School, Woolton, Liverpool.*†	Board of Management ... Hon. Sec.:—Rev. J. Bennett, 1a, Trueman Street, Liverpool.	Do. do.	1 male and 40 females. Feeble-minded cases of a degree of mental defect such as will permit of their living in association with and being instructed or trained with the children for whom the School is primarily intended. <i>Certified by Board of Education and by Home Office for 24 boys and 82 girls.</i>
(Do.)	...	Calderstones, Whalley, near Blackburn, with ancillary premises: Brockhall, Langho, near Blackburn. Dovecot (Horticultural School), Knotty Ash, Liverpool.*†	Lancashire Mental Hospitals Board ... Clerk:—Sir George Etherton, County Offices, Preston. (Medical Superintendent:—F. A. Gill, M.D., C.M.) Dovecot Committee ... Hon. Sec.:—Rev. F. A. H. Score, West morland Road, Huyton, near Liverpool.	L. Cotman, 8, Lune Street, Preston.	2,686. 1,110 males and 1,218 females at Calderstones and not more than 42 males and 316 females at Brockhall. All classes, including epileptics, within the meaning of the Act. 30 feeble-minded females; 26 over the age of 16 and 4 of an age and of a degree of mental defect such as would permit of their being housed and instructed with the children for whom the school is primarily intended. <i>Certified by Board of Education for 38 girls and by Home Office for 64 girls.</i>
(Do.)	...	Gillibrand Hall, Chorley Lisieux Hall, Whittle le Woods, Chorley. The Home, 4, Everton Terrace, Liverpool.	Committee of Management ... Hon. Sec.:—Rev. J. Bennett, 1a, Trueman Street, Liverpool. The Congregation of the Brothers of Charity. Committee of Management ... Board of Management ... Hon. Sec.:—Rev. J. Bennett, 1a, Trueman Street, Liverpool.	L. Cotman, 8, Lune Street, Preston. Do. do. C. T. Barton, Clerk to Justices, Liverpool. G. W. Swift, 74, Hanover Street, Liverpool.	40 female feeble-minded cases. Principally adults with a limited number of children under 16. 40 adult males. 15 females. Feeble-minded and moral defectives over the age of 16 years. 25 males: Roman Catholic feeble-minded children between the ages of 5 and 16 years. <i>Certified by Board of Education for 121 boys and by Home Office for 98 boys and 15 girls.</i>

* Certified as a Special School by Board of Education.

† Certified as a Special Industrial School by Home Secretary.

CERTIFIED INSTITUTIONS—continued.

COUNTY or COUNTY BOROUGH within which the Institution is situated C.B. = County Borough.	Name and Address of Institution.	Names of Managers or Owners.	Clerk to Visitors.	Number and Class of Defectives.
Lancashire— <i>contd.</i>	Royal Albert Institution, Lancaster.	Central Committee of Management ... (Medical Superintendent: W. H. Coupland, L.R.C.P. & S., Ed.)	J. T. Sanderson, 67, Church Street, Lancaster.	800 males and females.
Leicester ... (Leicester C.B.)	Leicester Frith, Groby Road, Leicester, <i>with ancillary premises:</i> Cross Corners, 2, Thur- caston Rd., Leicester; <i>and</i> Birstall Holt, Birstall Lane, Birstall, Leicester.	The County Borough Council of Leicester. Clerk of the M.D. Committee, Alliance Chambers, Horsefair Street, Leicester.	W. J. Freer, 10, New Street, Leicester. Do. do. Do. do.	120 males and 157 females, including those in ancillary premises. 30 females; imbeciles, feeble-minded, and moral defectives. 33 able-bodied, medium grade juvenile males.
London ...	The Helping Hand Home, 16, Cathcart Hill, Highgate, N.19. London Lock Hospital, 283, Harrow Road, W.9. South Side Home, Streatham Common, S.W.16	Committee of the Association for Helping Mentally Deficient Children. Hon. Sec.:—Mrs. Geoffrey Russell, 20, Gower Street, W.C.1. Committee of Management ... The L.C.C. Mental Hospitals Committee... Chief Officer:—Mental Hospitals Dept., Artillery House, Artillery Row, S.W.1.	Jno. Dix, Sessions House, Newing- ton, S.E.1. Do. do. Do. do.	30 feeble-minded females, preferably from the age of 16 years. 7 female feeble-minded and moral defectives. 80 female high-grade feeble-minded adults who, save with the previous consent of the Board of Control, shall be on licence from other Certified In- stitutions.
Middlesex ...	St. Teresa's, 97, Belmont Hill, Lewisham, S.E.13. Bramley House, Gordon Hill, Enfield.	Committee of Management ... Middlesex Mental Deficiency Committee... Clerk:—H. Scott Freeman, Staines.	Do. do. E. S. W. Hart, Guild- hall, Westminster. S.W.1.	120 female adults, high and medium grade. 50 female feeble-minded cases, aged 16 years and upwards.

Crathorne, Oak Lane, East Finchley, N.2.	The Church Army ... Hon. Sec.:—Mrs. Cannon, 57, Bryanston Street, London, W.1.	Do.	33 mothers and their children who are feeble-minded or moral defectives. The number of mothers never to ex- ceed 20, and no child to be retained beyond the age of 7 years. Poor Law cases received.
Pield Heath House School, Hillingdon, Uxbridge.*†	Board of Management ...	Do.	53 females. Feeble-minded and moral defectives of the Roman Catholic religion. Total cases not to exceed 123, and all to be fit for association with children.
St. Raphael's, The Butts, Brentford Little Plumstead Hall, Little Plumstead.	The Order of the Poor Servants of the Mother of God. Norfolk C.C. ...	Do.	<i>Certified by Board of Education for 62 girls, and by Home Office for 77 girls.</i> 60 high grade feeble-minded girls of 16 years and upwards. Roman Catholics. 70 patients.
Loddon and Clavering In- stitution, Heckingham.	Do. ...	Do.	1 male and 70 females, medium to low grade defectives of 16 years and upwards.
Eaton Grange, Unthank Rd., Norwich.	Norwich C.B. ...	J. F. Betts, Town Close, Norwich.	30 high-grade female adults and 7 juvenile cot and chair cases.
Prudhoe Hall Colony, Prudhoe - on - Tyne, Northumberland*	North Eastern County Boroughs Joint Board for the Mentally Defective.	H.D. Irwin, 54, New Bridge St., New- castle-on-Tyne.	196 males and 226 females: all classes. <i>Certified by Board of Education for 50 boys and girls.</i>
The Friars, Fryern Lawn, Bridgwater.	Miss A. E. Best ...	C. E. Newman, 68, Boulevard, Wes- ton-super-Mare.	17 females. Feeble-minded and moral defectives.
Sandhill Park, Bishop's Lydeard, Taunton,*	Somerset C.C. ...	Do.	60 males and 101 females. <i>Certified by Board of Education for 50 boys and 50 girls.</i>
<i>with ancillary premises:</i> Yatton Hall, Yatton, Bristol.	...	Do.	76 children.
Cambridge House, Flax Bourton, Bristol, and West End House, Shep- ton Mallet.	...	Do.	66 male and 30 female adults.
...	...	Do.	91 female adults.

* Certified as a Special School by Board of Education.
† Certified as a Special Industrial School by Home Secretary.

CERTIFIED INSTITUTIONS—continued.

COUNTY or COUNTY BOROUGH within which the Institution is situated C.B. = County Borough	Name and Address of Institution.	Names of Managers or Owners.	Clerk to Visitors.	Number and Class of Defectives.
(Bath C.B.) ...	The House of Help for Women and Girls, 112 Walcot Street, Bath.	Board of Management ... Sec.:—Miss L. Glynn Baker, 112, Walcot Street, Bath.	E. N. Fuller, LL.B., Bath.	66 feeble-minded females.
(Do.) ...	The Old Rectory, Bathwick Hill, Bath.	Bath Voluntary Association ...	Do. do.	21 high or medium grade feeble-minded adult females <i>admitted</i> on licence from other Institutions.
(Do.) ...	Rock Hall House (Magdalen Hospital School), Combe Down, Bath.	Municipal Charity Trustees of the City of Bath.	Do. do.	38 children of both sexes.
Stafford ...	Stoke Park, Bristol, with <i>ancillary premises</i> . Stallington Hall, Blythe Bridge, Stoke-on-Trent.	<i>See under County of Gloucester.</i> Stoke-on-Trent County Borough Council	E. Joy, M.A., County Buildings, Stafford.	77. <i>Mansion</i> : 16 boys under 21 and 44 females. <i>Male Block</i> : 17 males over 16.
Suffolk ...	Handford Home, Ranelagh Road, Ipswich.	Ipswich County Borough Council...	F. S. Ward, 32, Museum Street, Ipswich.	21 females. High-grade feeble-minded cases—age on admission 8 to 18 years.
Surrey ...	St. Joseph's Home, The Croft, Sudbury. Farmfield, near Horley, Surrey.	Board of Management ... L.C.C. Mental Hospitals Committee ... Chief Officer:—Mental Hospitals Dept., Artillery House, Artillery Row, S.W.1.	T. M. Braithwaite, Sudbury. D. Aukland, County Hall, Kingston-on-Thames.	27 feeble-minded females from 16 to 20 years of age, and of the Roman Catholic religion. Poor Law cases received. 133 males (adults or adolescents) of criminal experience or intractable disposition.
	The Manor Institution, Epsom, Surrey.	Do. do. (Medical Superintendent: E. S. Litteljohn, L.R.C.P.)	Do. do.	608 males and 663 females. All classes within the meaning of the Act. Reserved for London cases only. About 600 patients of both sexes.
	The Royal Earlswood Institution for Mental Defectives, Redhill. Mount Olivet, Frensham, Farnham. ...	Board of Management ... (Medical Superintendent: S. Langton, M.B.) The Congregation of the Servants of Christ the King ...	Do. do. Do. do.	30 feeble-minded males—age on admission 16 to 20 years. Church of England cases only.

Sussex, East ...	Botley's Park, Chertsey.	Surrey County Council. ...	Do.	do.	97 male adults of the younger employ- able type.
	Godstone Institution, Godstone.	Do. do.	Do.	do.	88 males. Imbeciles and feeble-minded over the age of 16.
	The Royal Hostel, Royal Common, Elstead, Godalming.	Surrey Voluntary Association ...	Do.	do.	32 high-grade male adults.
	Eagle House, London Road, Mitcham.	Surrey Voluntary Association ...	Do.	do.	46 high grade imbecile and feeble-minded females over 16.
	The Ellen Terry National Home for Blind Defec- tive Children, Reigate *	Executive Committee, Braille and Servers of the Blind League.	Do.	do.	30 blind defectives up to the age of 16. <i>Certified by Board of Education for 18 cases.</i>
	6, Morland Road, Croydon.	Croydon County Borough Council ...	J.M.Newnham, Town Hall, Croydon		20 low grade juvenile males.
	Thorpe Place, Thorpe, Chertsey.	<i>See under</i> County of Hampshire—St. Mary's Home, Alton.			
	The Hermitage, Fairwarp, Uckfield, <i>with ancillary premises:</i>	The Committee: E. Sussex County Council	H. J. T. McIlveen, County Hall, Lewes.		42 females.
	Wharf House, Lewes.	Brighton Guardianship Society, 2, Old Steine, Brighton.	Do.	do.	7 feeble-minded males
	"Dungates," Horeham Road.	Do. do.	Do.	do.	7 feeble-minded males.
Sussex, West ...	Tubwell Farm, Jarvis Brook.	<i>See under</i> County of Hampshire—St. Mary's Home, Alton.			
	The Home of the Holy Rood, Worthing.				
Warwick ...	Midland Counties Insti- tution, Knowle, near Birmingham.	General and Managing Committee ...	A. C. Burrows, 1, New Street, Warwick.		180 male patients.
	Warwickshire Weston Colony, Weston- under-Weatherley, Leamington Spa.	Warwickshire M.D. Committee ...	Do.	do.	40 male and 18 female adult feeble- minded.
(Birmingham C.B.)	Coleshill Hall, near Birmingham.	Birmingham M.D. Committee ...	Do.	do.	120 males and 120 females aged 16 years and upwards.
	The Agatha Stacey Home, Rednal, near Birming- ham.	The Committee of the Agatha Stacey Home. Financial Sec.:—Miss C. P. Fleetwood, Depot, 158, Broad Street, Birmingham. Birmingham City Council (Medical Superintendent: A. M. McCutcheon, F.R.F.P.S.)	C. E. Barker, Bir- mingham.		40 high-grade female feeble-minded patients over 15 years of age.
(Birmingham C.B.)	Monyhull Colony * King's Heath, Bir- mingham.		Do.	do.	583 males and 647 females. All classes. <i>Certified by the Board of Education for 310 children.</i>

* Certified as a Special School by Board of Education.

CERTIFIED INSTITUTIONS—continued.

COUNTY or COUNTY BOROUGH within which the Institution is situate C.B. = County Borough.	Address of the Institution.	Names of Managers or Owners.	Clerk to Visitors.	Number and Class of Defectives.
Wilts 	1, Wilcot Road, Pewsey.	Wiltshire M.D. Committee ...	W. L. Bown, Trow-bridge.	81 males.
Worcester ...	Besford Court Home, near Defford.*† <i>with ancillary premises</i> ; St. Joseph's, Astwood Bank, near Redditch; and The Hostel.	Committee of Management ...	C. H. Bird, Shire Hall, Worcester.	76 males; all cases, whether under or over the age of 16 years, to be of a degree of mental defect such as will permit of their being housed and instructed with the children for whom the school is primarily intended. Total cases not to exceed 195. <i>Certified by Board of Education and by the Home Office for 119 boys.</i>
Yorks, W.R. ...	Rawcliffe Hall, near Goole.	West Riding Mental Defective Committee Sec.:—W. H. Brown, County Hall, Wakefield.	W. H. Coles, Burton Street, Wakefield.	130 females. All classes within the meaning of the Act—10 years of age and upwards.
(Leeds C.B.) ...	Meanwood Park Colony, Meanwood, Leeds.	Leeds Mental Defective Committee Correspondent:—S. Wormald, Executive Officer, 38, Park Square, Leeds.	F. Richards, Town Hall, Leeds.	40 males and 249 females.
(Do.) ...	<i>With ancillary premises:</i> Meanwood Towers, Stonegate Road, Meanwood, Leeds.	Do. do.	Do. do.	64 low grade males, of whom not more than 10 shall be cot and chair cases.
Yorks, W.R. ...	Kepstorn, Morris Lane, Kirkstall, Leeds. Mid-Yorks Certified Institution, Whixley, Yorks.	Do. do. Mid-Yorkshire Joint Board for the Mentally Defective. Clerk:—T. Thornton, Town Clerk's Office, 11, Park Square, Leeds. West Riding M.D. Acts Committee ...	Do. do. W. H. Coles, Burton Street, Wakefield.	40 females. High grade feeble-minded patients over 16 years of age. 214 males. All classes within the meaning of the Act.
	The Mansion, Kirkburton, near Huddersfield.		Do. do.	60 male imbecile and low-grade cases, of whom 12 may be of lowest grade.
	Oulton Hall, Oulton, near Leeds.	Do. do.	Do. do.	164 males. In-County cases only.

	St. Catherine's, Loversall, Doncaster.	S.W. Yorkshire Joint Board for the Mentally Defective.	Do.	do.	20 males and 120 females.
	Craigie Lea Children's Home, Ovenden, Halifax.	Halifax County Borough Council	Do.	do.	16 males and 12 females.
	Hollow Meadows, Malin Bridge, Sheffield.	Sheffield City Council	Do.	do.	58 imbecile and feeble-minded males.
(Sheffield C.B.)	Wales Court, Wales, Kiveton, Sheffield.	Do.	Do.	do.	50 females. All classes within the meaning of the Act.
	Cliffe House, Elm Lane, Shiregreen, Sheffield.	Do.	F. B. Dingle, Court House, Sheffield.		29 low-grade juvenile males.
(Bradford C.B.)	Ashfield, 269, Thornton Road, Thornton, near Bradford.	The County Borough Council of Bradford Clerk :—Town Clerk, Town Hall, Bradford.	T. Gill, Bradford		50 males. All classes within the meaning of the Act.
	Westwood, Clayton Heights, Clayton, near Bradford.	Do.	Do.	do.	50 females. All classes within the meaning of the Act.
Yorks, E. R. ... (Kingston-on-Hull C.B.)	Tilworth Grange, Sutton, Hull.	Kingston-on-Hull County Borough Council	W. C. Bairstow, Law Courts, Hull.		83 females. All classes within the meaning of the Act.

* Certified as a Special School by Board of Education.
† Certified as a Special Industrial School by Home Secretary.

INSTITUTIONS APPROVED UNDER SECTION 37.

Owning Local Authority	Address of the Institution.	Clerk to Visitors.	Number and Class of Defectives.
Bedford... ..	St. Peter's Hospital, Kimbolton Road, Bedford.	G. J. M. Whyley, Bedford ...	13 adult females.
	1, Grovebury Road, Leighton Buzzard.	J. B. Graham, Shire Hall, Bedford.	6 female adult feeble-minded and moral defectives.
Berks	Central House, Bradfield, Reading	H. J. C. Neobard, Shire Hall, Reading.	44 female adults. Medium to high-grade.
	St. Anthony's, Binfield Road, Bracknell, Berks.	Do. do.	70 males.
Bucks	100, Bierton Hill, Aylesbury ...	H. Fisher, County Hall, Aylesbury	18 male and 12 female adults.
	19, Stratford Road, Buckingham	Do. do.	14 male and 10 female adults.
	1, Buckingham Road, Winslow ...	Do. do.	9 males and 40 females. Medium to low grade adults.
Cambridge	81A, Mill Road, Cambridge ...	J. Lyon, 21, St. Andrew Street, Cambridge.	4 male and 10 female adults. Suitable for treatment in a common ward.
	29, Union Lane, Cambridge ...	Do. do.	2 male and 8 female adults.
	The Red House, Linton	A. Tabrum, Clerk of the Peace, Cambridge.	4 female adult feeble-minded and moral defectives.
Isle of Ely	Tower House, Cambridge Road, Ely	C. E. F. Copeman, County Hall, March.	6 female adults.

Caernarvon ...	Eryri Hospital, Caernarvon ...	A. Bodvel-Roberts, Caernarvon ...	19 males under 12 and 16 females under 16.
Cheshire ...	Tarvin House, Boughton Heath, Chester.	G. C. Scrimgeour, Northgate Street, Chester.	15 male and 40 female adults.
(Birkenhead C.B.)	Birkenhead Union Sanatorium, Tranmere, Birkenhead.	E. W. T. Gasking, Sessions Court, Birkenhead.	30 adults.
(Chester C.B.)	57, Hoole Lane, Chester ...	G. C. Scrimgeour, Northgate Street, Chester.	40 females; 25/30 being under 16 years and 10/15 adults.
Cornwall ...	Berry Tower House, Bodmin ...	F. A. H. Sheers, Clerk of the Peace, Truro.	5 male and 20 female adults.
	Budock House, Falmouth ...	Do. do.	34 males and 13 females; (10 adult males, 13 adult females, and 24 male juvenile defectives).
	The Retreat, St. Columb ...	Do. do.	24 females. Not more than 20 low grade juveniles, or more than 4 high grade and stable adults.
Denbigh ...	Gorphwysfa Hospital, Ruthin ...	W. Jones, Ruthin ...	15 male and 20 female adults.
Derby ...	12A, Newbold Road, Chesterfield ...	W. B. Bunting, Chapel-en-le-Frith	1 adult female.
	Shire Hill View, Glossop ...	Do. do.	15 male and 12 female adults; imbecile and feeble-minded defectives.
(Derby C.B.)	Boundary House, Uttoxeter Road, Derby.	W. R. H. Whiston, Derby ...	30 adult females.
Devon ...	19, Alexandra Road, Barnstaple ...	S. A. Copp, Barnstaple ...	20 male and 6 female adults.
	Western Road, Crediton ...	F. A. Pearce, Exeter ...	18 male and 20 female adults.
	Marlpits House, Honiton ...	Do. do. ...	24 female adults.
	Red Hill House, St. Thomas, Exeter	J. I. Pengelly, The Court House, Exeter.	6 male and 12 female adults.
	1, North Road, South Molton ...	R. L. Riccard, South Molton ...	15 male and 24 female adults.
(Plymouth C.B.)	Ford House, Auckland Road, Devonport.	J. Bone, Plymouth ...	25 males and 50 females.
(Exeter C.B.)	Heavitree Road, Exeter ...	J. I. Pengelly, The Court House, Exeter.	12 adults of each sex.

INSTITUTIONS APPROVED UNDER SECTION 37—continued.

Owning Local Authority.	Address of the Institution.	Clerk to Visitors.	Number and Class of Defectives.
Dorset	1, Bedford Place, Bridport ...	J. L. Torr, Dorchester. ...	25 female adults.
Durham	Oaklands, Bishop Auckland ...	G. H. Watson, Darlington ...	82 adult females.
(Darlington C.B.) ...	90, Yarm Road, Darlington ...	Do. do.	6 males and 6 females. Medium to low-grade adults.
(Gateshead C.B.) ...	Gateshead	Do. do.	4 males and 19 females.
(W. Hartlepool C.B.)	Howbeck House, West Hartlepool	Do. do.	100 males and 120 females.
(South Shields C.B.)	1, Moor Lane, West Harton, South Shields.	Do. do.	78 adult males.
(Sunderland C.B.) ...	"Highfield," Hylton Road, Sunderland.	E. S. Dingle, Sunderland ...	3 males and 1 female adults.
Essex	People's Home, Saffron Walden ...	C. S. D. Wade, Clerk of the Peace, Saffron Walden.	18 female adults.
	Winstree House, Stanway, Colchester.	H. F. Bawtree, Witham ...	36 female adults.
(West Ham C.B.) ...	The Forest Gate Hospital,† Forest Lane, Forest Gate, E.7.	J. H. Jackson, Police Court, West Ham, E.15.	20 male and 30 female adults and 10 males and 15 females under the age of 16 years. <i>Certified by Board of Education for 15 cases.</i>
Flint	Cartrefle, St. Asaph	H. A. Tilby, County Offices, Mold	12 adults of each sex.
Glamorgan	Hill House, Penmaen, Swansea ...	J. W. Thorpe, Magistrates' Clerk, Swansea.	12 adult females, all classes.
(Cardiff C.B.)	Ely Lodge, Ely, Cardiff	E. J. Hayward, Law Courts, Cardiff	51 male and 38 female adults.
Gloucester	24, Queen's Hill, Cirencester ...	R. W. Ellett, Cirencester	6 male and 18 female adults and 26 male and 20 female juveniles.
	East View, Mangersbury, Stow-on-the-Wold.	E. T. Gardom, o.B.E., Shire Hall, Gloucester.	5 male and 10 female adults.

	Gloucester Street, Winchcomb ...	Do.	do.	14 males and 18 females.
(Bristol C.B.) ...	Stapleton Institution, Fishponds, Bristol.	S. Young, Petty Sessional Court House, Bristol.		120 male and 140 female adults, and 40 low-grade juveniles.
(Do).	South Mead Hospital, Bristol ...	Do.	do.	50 of each sex. 4 females over 16 years to assist in the work of the Institution.
Hereford ...	The Infirmary, Ross ...	E. W. Maples, Hereford ...	...	25 male and 15 female adults.
Herts ...	"Haymeads," Bishop Stortford ...	P. E. Longmore, Hertford ...	...	40 female adults.
	60, Vicarage Road, Watford ...	Do.	do.	18 male and 22 female adults.
Isle of Wight ...	Forest House, Parkhurst, Isle of Wight.	H. Barber, The Castle, Winchester		20 males and 20 females. Idiot, imbecile, or feeble-minded defectives between the ages of 16 and 60 years.
Kent ...	Hartley House, Cranbrook ...	Charles E. Warner, Tonbridge ...	...	10 male and 20 female adults.
	King's Hill, West Malling ...	Do.	do.	14 female adults.
	2, Mill Lane, Sandwich ...	Do.	do.	48 male and 24 female adults.
	Birchfield House, Sundridge, Seven-oaks.	Do.	do.	20 female adults.
(Canterbury C.B.)	The Home, Nunnery Fields, Canterbury.	T. A. Bowen, Clerk to Justices, Canterbury.		10 male and 10 female adults.
Lancashire ...	27, Stanley Street, Ulverston ...	J. T. Sanderson, 67, Church Street, Lancaster.		75 adult females.
	Elaves Lane, Chorley ...	L. Cotman, 8 Lune Street, Preston		15 male and 35 female adults.
(Liverpool C.B.)	Seafield House, Seaforth, Liverpool	G. W. Swift, 74, Hanover Street, Liverpool.		101 males and 134 females.

† Certified as a Special School by Board of Education.

INSTITUTIONS APPROVED UNDER SECTION 37—*continued.*

Owning Local Authority.	Address of the Institution.	Clerk to Visitors.	Number and Class of Defectives.
Leicester ...	1, Coplow Road, Billesdon, Leicester	W. J. Freer, 10, New Street, Leicester.	12 male and 14 female adults.
	59A, Regent Street, Loughborough	Do.	24 female adults ; feeble-minded and high grade.
Lincoln (Lindsey) ...	The Home, Caistor ...	E. W. Scorer, Lincoln ...	16 female adults.
Do.	181, Lea Road, Gainsborough ...	Do.	12 male and 12 female adults.
Do.	79A, Foundry Street, Horncastle ...	Do.	12 male and 9 female adults.
Do.	The Gables, Hundleby, Lincs. ...	Do.	18 adults of each sex.
(Kesteven) ...	Dysart Road, Grantham ...	R. F. M. White, Grantham ...	2 male and 15 female adults.
Do.	93, East Gate, Sleaford ...	W. T. Phipps, Grantham ...	1 male and 9 female adults.
Do.	Well Head House, Bourne ...	Do.	4 adults of each sex.
(Lincoln C.B.) ...	8A, Burton Road, Lincoln ...	W. M. Phillips, Clerk to the Justices, Lincoln.	10 adults of each sex. Medium to low grade.
London ...	Darent Training Colony, Dartford	Chas. E. Warner, Tonbridge ...	Trainable cases.
	Leavesden Mental Hospital, Abbot's Langley, Watford.	P. E. Longmore, Hertford.	Unimprovable adults and cases of chronic infirmity.
	Caterham Mental Hospital, Cater- ham, Surrey.	D. Aukland, County Hall, Kingston-on-Thames.	Unimprovable adults. Low grade trainable children. 35 high-grade employable adult males at Chaldon Mead.
	Fountain Mental Hospital, Tooting Grove, S.W.17.	Jno. Dix, Sessions House, New- ington, S.E.1.	Children. All classes up to 9 years. Unimprovable. Girls up to 16 years. Adult female working patients.
	158A, High Street, Plumstead, S.E.18	Do.	25 male and 45 female adults.

London— <i>contd.</i>	St. Stephen's Hospital, 369, Fulham Road, S.W.10.	Jno. Dix, Sessions House, Newington, S.E.1.	5 male and 10 female adults suffering from venereal disease.
Merioneth ...	Minfordd, Penrhyndeudraeth, Merioneth.	H. J. Owen, Clerk of the Peace, Dolgelly.	23 male and 27 female adults.
Middlesex ...	Enfield House, 19, Chase Side Crescent, Enfield; <i>with ancillary premises</i> ; Fortescue Villas, Gentleman's Row, Enfield.	E. S. W. Hart, Guildhall, Westminster, S.W.1.	Enfield House—42 males, feeble-minded boys and adult males. Fortescue Villas—32 females under the age of 16 years—idiots, imbeciles, and a limited number of feeble-minded cases. 12 male and 21 female adults.
Monmouth ...	1, Colham Green, Hillingdon East, Uxbridge.	Do. do.	55 female adults.
Montgomery ...	Coedygric Institution, Griffithstown.	T. L. Hughes, Clerk of the Peace, Newport (Mon.).	12 male and 30 female adults.
	Cae Hein, Forden, Welshpool ...	J. E. Tomley, Montgomery ...	28 juveniles of each sex. Cot and chair cases excluded.
	The Lodge, Caersws, Mont. ...	Do. do.	12 female adults.
Norfolk ...	Hill House, Pulham Market ...	H. C. Davies, The Shirehouse, Norwich	12 adult females.
	Cades Hill House, Attleborough ...	Do. do.	1 male.
(Great Yarmouth C.B.)	150A, Caister Road, Great Yarmouth	G. Bracey, Great Yarmouth ...	6 adult males and 10 females.
(Norwich C.B.)	The Lodge, Bowthorpe Road, Norwich.	J. F. Betts, Town Close, Norwich.	16 male and 16 female adults.
Northampton ...	77, London Road, Kettering ...	H. J. Cove, Northampton ...	10 male and 19 female adults.
	3A, Castle Street, Wellingborough	Do. do.	9 adults.
(Northampton C.B.)	137A, Wellingborough Road, Northampton.	A. J. Redhead, Northampton ...	12 male and 21 female adults.
(Soke of Peterborough)	Thorpe Road House, Peterborough	W. J. Deacon, Clerk of the Peace, Peterborough.	28 adult females.
Northumberland ...	Silverton House, Rothbury, Morpeth	H. D. Irwin, 54, New Bridge Street, Newcastle-on-Tyne.	40 female adults.
Notts ...	121, Highbury Road, Bulwell, Nottingham.	K. T. Meaby, Shire Hall, Nottingham.	

INSTITUTIONS APPROVED UNDER SECTION 37—*continued.*

Owning Local Authority.	Address of the Institution.	Clerk to Visitors.	Number and Class of Defectives.
Notts— <i>contd.</i>			
	1, Leverton Road, East Retford ...	K. T. Meaby, Shire Hall, Nottingham.	4 male and 8 female adults.
	105, Stockwell Gate, Mansfield ...	Do. do.	6 male and 12 female adults
	Greet House, Upton, Southwell ...	Do. do.	3 male and 5 female adults.
Oxford ...	26, London Road, Chipping Norton	F. G. Scott, County Hall, Oxford.	14 male and 32 female adults.
Rutland ...	The Ashes, Ashwell Road, Oakham	B. A. Adam, Clerk of the Peace, Oakham.	6 adult females.
Shropshire ...	50, Shrewsbury Road, Church Stretton.	A. A. Johnson, County Buildings, Shrewsbury.	5 female adults.
	The Beeches, Iron Bridge, Salop ...	C. J. Sargeant, Much Wenlock ...	10 male and 15 female adults.
Somerset (Bath C.B.)	Frome Road House Institution, Odd Down, Bath.	E. N. Fuller, LL.B., Guildhall, Bath	10 male adults.
Southampton ...	Cowderys Down House, Basing ...	F. V. Barber, The Castle, Winchester.	30 females. Feeble-minded over 16.
	52, Wickham Road, Fareham ...	Do. do.	30 male and 10 female adults.
	Barton House, Fordingbridge, Salisbury.	Do. do.	14 male and 13 female adults.
(Portsmouth C.B.)	140, St. Mary's Road, Portsmouth	B. J. Tay, Guildhall, Portsmouth	29 male and 31 female adults.
Stafford ...	15, Trent Valley Road, Lichfield ...	A. H. Barnes, Lichfield ...	4 male and 8 female adults.
	Burton House, Dudley ...	E. Joy, M.A., County Buildings, Stafford.	50 male and 65 female adults.
(Burton-on-Trent C.B.)	145, Belvedere Road, Burton-on-Trent.	H. W. Goodger, Stapenhill, Burton-on-Trent.	10 male and 15 female adults.

	12, Stream Road, Wordsley, Stour- bridge. <i>with ancillary premises ;</i> Sandfield, Wordsley. 31, Wigginton Road, Tamworth ...	E. Joy, M.A., County Buildings, Stafford.	186 male and 130 female adults, and 68 children.
(Walsall C.B. and W. Bromwich C.B.) (Wolverhampton C.B.)	Great Barr Park, Great Barr, Birmingham. Heath Town, Wolverhampton ...	Do. do.	1 male and 12 female adults.
Suffolk (Ipswich C.B.) ...	Heathfield, Woodbridge Road, Ipswich.	Do. do.	607 patients.
Surrey	2, Horsham Road, Dorking ...	H. M. Foster, Town Hall, Wolver- hampton. S. Ward, 32, Museum Street, Ipswich.	17 male and 14 female adults. 20 male and 25 female adults.
	Murray House, Ottershaw, Chertsey St. John's, Redhill	D. Aukland, County Hall, King- ston-on-Thames.	3 male and 12 female adults.
Sussex (East)	West Hylands, Cuckfield ...	Do. do.	48 feeble-minded adult females.
	2, Upper Shoreham Road, King- ston-by-Sea. Pouchlands House, East Chilting- ton, Lewes.	Do. do.	6 male and 9 female adults. (In-County cases only).
(Eastbourne C.B.) ...	St. Mary's Institution, 123, Church Street, Eastbourne	H. J. T. McIlveen, County Hall, Lewes. Do. do.	10 male and 20 female adults. 5 male and 5 female adults.
(Hastings C.B.) ...	40, Frederick Road, Hastings ...	Do. do.	36 males and 12 females aged 16 years and upwards.
Sussex (West)	78, Crawley Road, Horsham ...	Do. do.	7 medium to low-grade females over 16 years of age.
	Budgenor Lodge, Midhurst ...	F. G. Langham, 44a, Robertson Street, Hastings. S. Thornely, County Hall, Chi- chester.	12 adults of each sex. 5 male and 10 female adults.
	North View, East Preston, Little- hampton.	Do. do.	5 male and 15 female adults. 6 male and 15 female adults.

INSTITUTIONS APPROVED UNDER SECTION 37—*continued.*

Owning Local Authority.	Address of the Institution.	Clerk to Visitors.	Number and Class of Defectives.
Warwick (Birmingham C.B.)	Erdington House, Erdington, Birmingham.	C. E. Barker, Birmingham	50 adults of each sex, and 31 male and 30 female juveniles.
Warwick	91, Union Road, Warwick	J. Tibbits, Warwick	4 male and 24 female adults.
Westmorland	Ackenthwaite End, Milnthorpe, Westmorland.	H. B. Greenwood, Clerk of the Peace, Kendal.	26 adult males, 27 adult females, and 18 boys and 24 girls.
Wilts	7, Commercial Road, Devizes	G. W. Jackson, Devizes	32 males under 16 and 16 females who are employable younger adults.
	Semington House, Trowbridge	W. L. Bown, Trowbridge	22 male and 36 female adults.
	Kingsbury House, Wilton, Salisbury	Do.	43 female adults.
Worcester	5, Avonside, Hampton, Evesham...	C. H. Bird, Worcester	4 males and 4 females.
(Worcester C.B.)	1a, Tallow Hill, Worcester...	J. L. Wood, Guildhall, Worcester	30 male and 20 female adults.
Yorkshire: East Riding	19, Bridlington Road, Driffield	J. R. Proctor, County Hall, Beverley.	15 male and 31 female adults.
(Kingston-upon-Hull C.B.)	188, Anlaby Road, Kingston-upon-Hull.	W. C. Bairstow, The Law Courts, Hull.	24 male and 24 female adults.
(York C.B.)	75, Huntington Road, York	H. Venn Scott, Clifford Street, York.	10 male and 20 female adults, (idiot, imbecile and feeble-minded), and 20 low grade juvenile males.

Yorkshire : North Riding	High Hall, Bainbridge, Askrigg ...	A. Procter, 5, New Street, York ...	20 female adults.
	Holgate Institution, Barnabas Road, Middlesbrough.	T. Belk, Municipal Buildings, Middlesbrough.	7 adult females.
	Sunbeck House, Northallerton ...	A. Procter, 5, New Street, York ...	6 males and 6 females.
	18, Dean Road, Scarborough ...	C. W. Goodall, Scarborough ...	35 male and 32 female adults.
Yorkshire : West Riding (Barnsley C.B.)	80, Gawber Road, Barnsley ...	W. H. Coles, Burton Street, Wakefield.	10 adults of each sex.
(Bradford C.B.) ...	The Bowling Park Institution, Bradford. <i>with ancillary premises : Odsal Sanatorium, Rooley Lane, Bradford.</i>	T. Gill, Bradford ...	15 female adults.
	The Daisy Hill Institution, Bradford	Do. do.	20 male adults.
(Doncaster C.B.) ...	Springwell House, Balby, Doncaster	W. M. R. Lewis, Doncaster ...	20 adults of each sex.
(Halifax C.B.) ...	166, Gibbet Street, Halifax ...	W. H. Coles, Wakefield ...	29 male and 23 female adult active medium to low grade defectives. 10 male and 25 female adults.
(Huddersfield C.B.) ...	61, Deanhouse, Netherthong, Huddersfield. 1, Reins Road, Giggleswick, Settle	Do. do. Do. do.	37 males and 5 females, 27 males under sixteen years of age to be accommodated in the Isolation Hospital and 10 male and 5 female adults in the Main Building.
(Sheffield C.B.) ...	Fir Vale House, Pitsmoor, Sheffield	F. B. Dingle, Sheffield ...	20 male and 50 female adults.
	The Beeches, Tadcaster ...	W. H. Coles, Wakefield ...	24 adult females—imbeciles, feeble-minded and moral defectives.
	Greno Buildings, Grenoside, Sheffield.	Do. do.	20 feeble-minded adult females.

† Certified as a Special School by Board of Education.

CERTIFIED HOUSES.

COUNTY.	Name and Address of House.	Names of Managers or Owners.	Clerk to Visitors.	Number and Class of Defectives.
Herts ...	Arniston Nursery School, Boxmoor House, Boxmoor, Herts.	Miss J. M. Isbister and Miss M. D. Isbister	P. E. Longmore, Hertford.	20 low-grade cases of either sex.
Lancashire ...	Cavendish House, Woodvale, Ainsdale, near Southport.	Miss Hutsby ...	G. W. Swift, 74, Hanover Street, Liverpool.	42 female patients from 3 years of age.
Middlesex ...	St. Margaret's, 9, Priory Road, Bedford Park, London, W.4.	Miss Rose H. D. Whiting ...	E. S. W. Hart, Guildhall, Westminster, S.W.1.	10 females. Imbeciles and feeble-minded.
	Larkfield, Hampton Hill ...	Mrs. E. Lethbridge ...	Do. do.	16 juveniles: 10 ambulant low grade imbeciles and 6 cot and chair cases.
	Normansfield, Kingston Road, Teddington.	R. L. Langdon-Down, M.B., and P. L. Langdon-Down, M.B.	Do. do.	150 males and females, not more than 100 of either sex at any one time.
Sussex, East ...	St. Joseph's Home, Burgess hill.	Proprietors of St. George's Retreat ...	H. J. T. McIlveen, County Hall, Lewes.	30 females of 12 years of age and upwards.
(Brighton C.B.)	Villa Maria, Kemp Town, Brighton.	Do. do.	A. G. Walker, Clerk to Justices, Brighton.	12 females. All classes within the meaning of the Act from 12 years of age and upwards.

APPROVED HOMES.

COUNTY.	Name and Address of Home.	Names of Managers or Owners.	Number and Class of Defectives.
Berks	St. Agnes Home School, 36, Matlock Road, Caversham.	Miss Sarah Dugdale	6 children.
Bucks	Lynwood, Woburn Sands, Bucks.	Mrs. A. M. Loveless	7 males.
Cheshire	"Westfield," London Road, Poynton	Miss E. C. and Miss M. F. Evatt	4 boys and 6 girls between the ages of 5 and 16 years.
Cornwall	The Elizabeth Barclay Home of Industry, Bodmin.	The Committee of the Elizabeth Barclay Home of Industry, Bodmin.	26 females.
Devon	Raleigh House, Ottery St. Mary.	Miss L. Cottrell and Miss E. Costiff	4 male and 11 female juveniles.
Dorset	Cornsclose, South Brent	Miss B. E. Sutherns	10 females over the age of 14 years.
	Shirley, West Moors	Miss E. Coffin	6 feeble-minded female adults.
Essex...	Gay Bowers, West Hanningfield, Chelmsford.	Percy and Mrs. Gertrude Chennells	7 of one sex.
Gloucester	Southend House School, Hatley Brake, Cheltenham.	Miss Agnes King-Turner	30 cases of either sex—each child in all respects suitable to be in a house where the sexes are associated.
Herts...	Rowley Lodge, Rowley Green, Barnet	Miss E. M. Wall	14 children.
Kent...	Upper Hollenden Farm, Princess Christian's Farm Colony, Hildenboro', Kent.	National Association for the Feeble-minded, 72, Denison House, 296, Vauxhall Bridge Road, Westminster, S.W.1.	18 males.
	Grove House School, Pluckley, Ashford.	Mr. and Mrs. H. T. Green	24 males between the ages of 7 and 16 years.
	Holmesdale, South Darenth, Dartford.	Miss B. Sergeant	5 male and 6 female children.
Merioneth	Bryn School, Hengwrt Uchaf, Dolgelly.	Mrs. G. I. Parry and Mr. T. G. Parry	50 males.

APPROVED HOMES—*contd.*

COUNTY.	Name and Address of Home.	Names of Managers or Owners.	Number and Class of Defectives.
Middlesex ...	Alexander House, 117, High Street, Uxbridge.	National Association for the Feeble-minded, 72, Denison House, 296, Vauxhall Bridge Road, Westminster, S.W.1.	24 females.
	Conifers, Kingston Road, Teddington.	R. L. Langdon-Down, M.B., and P. L. Langdon-Down, M.B., Normansfield, Hampton Wick.	3 male (children) and 22 female private patients.
	Trematon, Broom Road, Teddington.	Do. do. do.	24 males. Private.
	St. Christopher's School, Amherst Road, Ealing, W.	Miss M. C. B. Foster ...	28 feeble-minded private patients.
	Meadowside, Cambridge Road, Teddington.	Miss F. M. Deck ...	13 patients of both sexes, provided each case is in all respects suitable to reside in a house where the sexes are associated.
Norfolk ...	Gimingham Hall Farm, Gimingham, Norwich.	Miss S. A. Huntly ...	17 females.
Northumberland ...	The Home of Industry, Bow Villa, Morpeth.	Committee of six Ladies ...	16 females. Poor Law cases received.
Oxford ...	Oathurst, Bampton, Oxon	Mrs. E. V. Lawson ...	8 male adults.
Somerset ...	Lyncombe Hall, Bath ...	Miss W. Stanley ...	12 children.
Surrey ...	Belmont Nursery, Beddington. Donec, Grayshott, Hindhead.	Miss Lilian Mason ... Miss R. L. Binney ...	35 children of either sex. 8 females.

Surrey— <i>contd.</i>	St. Alban's, Duxhurst, Reigate.	The Revd. A. H. Baverstock	...	...	5 males over 14 years of age.
Sussex (East) (Hastings C.B.)	Lynton, Coombe Lane, Kingston Hill.	Miss M. I. Morrell	...	...	6 females between the ages of 14 and 18 years on admission.
	Tilden Cottage, Hindhead	Miss A. Willsher	...	...	7 males from 10 to 18 years of age.
	St. Paul's House, Upper Maze Hill, St. Leonards-on-Sea.	Mrs. Jennie Meiklejon	...	...	33 defectives, not more than 5 to be males.
	Dunctlutha, St. Helen's Park, Hastings.	Miss Mole and Miss Bruce	...	...	40 males.
	The Margaret Macdowall School, Inholmes Park Road, Burgess Hill.	Miss A. Park and Miss E. M. Shelton	...	...	22.
Sussex (West)	Roffey House, Church Road, Burgess Hill.	Miss O. B. Matthews	...	...	10 children.
	The Priory, Tortington, near Arundel.	Miss D. S. Ault	...	...	16 males.
	Simmons Court, Aldwick Gardens, Aldwick, Bognor	Miss M. A. N. Tabuteau	...	...	6 boys.
	Haute Terre, Franklin Road, Hayward's Heath.	Miss L. H. Smyth	...	...	10 children.
	The Vineyard, Longbridge Lane, Birmingham, with ancillary premises :	Miss M. F. Bridie	...	...	77 juveniles (34 at The Vineyard, 8 girls at Vinette, 14 boys at the Scotch House, 13 boys at Moorgreen Hall). Each case to be suitable to reside in a house where the sexes are associated.
Warwick	(a) Moorgreen Hall, Weatheroak.				
	(b) The Scotch House, Finstall, Bromsgrove				
	(c) Vinette.				
	Hughenden, Tile Hill, Coventry.	Mrs. L. Stear	...	...	10 male children.
	Sunfield Children's Home, Wesley Park Road, Selly Oak, Birmingham.	M. H. Wilson	...	...	20 children.

